DOCUMENT RESUME

ED 133 265 SO 009 680

AUTHOR Bell, Gwen, Ed.
TITLE EKISTICS [OIKIETIKH]: The Problem and Science of Human Settlements, Volume 41, Number 246, May 1976. Education.
INSTITUTION Athens Center of Ekistics (Greece).
PUB DATE May 76
NOTE 66p.
AVAILABLE FROM Editorial Office, Ekistics, Page Farm Road, Lincoln, Massachusetts 01773 ($4.00 paper cover, 10 or more $3.00 each)

EDRS PRICE MF-$0.83 Plus Postage. HC Not Available from EDRS.
DESCRIPTORS Comparative Education; *Developing Nations; Educational Development; Educational Improvement; Educational Needs; *Educational Planning; Educational Programs; *Environment; Environmental Education; Environmental Influences; Global Approach; *Human Geography; *Human Living; Institutes (Training Programs); Interdisciplinary Approach; International Education; Non Western Civilization; Planned Community; Socioeconomic Influences; World Problems

ABSTRACT

Articles related to educational planning in developing nations are presented. This issue of the journal of the World Society for Ekistics reviews environmental and settlement education programs which offer a wide variety of new approaches. Topics discussed include becoming a planning society; challenges, dilemmas, and strategies of ekistics education; and major objectives of educational policies in developing nations. Dealing generally with the problem of synthesizing knowledge, the articles on educational programs discuss environmental education programs in developing countries and interdisciplinary approaches to educational planning. Two articles emphasize the design of model educational systems--one in Nigeria and the other in non-Western nations. Another article describes the necessity to develop skilled manpower for building and planning at the local level. The remaining articles report on the feasibility and accomplishments of training courses in developing nations. Also discussed are recent widespread concerns of educational policy in developing nations, such as women, economic productivity, and urban-rural differences, as well as literacy education. Tables, photographs, and references are included. (Author/DB)

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EKISTICS

the problems and science of

HUMAN SETTLEMENTS

EKISTICS: the problems and science of HUMAN SETTLEMENTS
is published by the Athens Center of Ekistics of the Athens Technological Organization, 24 Strat. Syndesmou, Athens 136, Greece.

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Printers The Athens Publishing Center, Graphic Arts Co., Ltd.

Subscription rates Twelve issues per year.
1 year $24; 2 years $44 (or equivalent).
Payable to "EKISTICS" by check or through the First National City Bank, Athens.

Subscription correspondence For Canada and the USA: EKISTICS, Page Farm Road, Lincoln, Mass. 01773, USA.
For the rest of the world: EKISTICS, Athens Center of Ekistics, PO Box 471, Athens, 136, Greece.

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Διευθυντὴς Συντάξεως Γκουέν Μπέλλ, Πέιτζ Φάρμ Ρόντ, Λίνκολν, Μασσαχουσέτη, ΗΠΑ 01773.
Προϊστάμενος Τυπογραφείου Νίκος Ἀβρονιδάκης, Σπ. Μερκούρη 32, Ἀθῆναι
Τιμὴ τεύχους Δρχ 60
Μάϊος 1976

Printed in Greece
GR ISSN 0013-2942

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The society is a nonpolitical and nonreligious body with limited membership, formed to study man's patterns of living and their physical expression in the past, present, and future. The aims and objectives of the society are:

- To promote the development of knowledge and ideas concerning human settlements by research and through publications, conferences, scholarships, etc;
- To encourage the development and expansion of education in ekistics;
- To educate public opinion concerning ekistics, thus stimulating worldwide interest and cooperation;
- To recognize the benefits and the necessity of an interdisciplinary approach to the needs of human settlements, and to promote and emphasize such an approach.

The society is an international nongovernmental organization in consultative status with the United Nations.

Membership applications may be sent to the Secretary General.

The Athens Center of Ekistics

The Athens Technological Organization started ekistic research and educational programs in 1958 and established the Athens Center of Ekistics in 1963 to foster a concerted program of research, education, documentation, and international cooperation related to the development of human settlements. Its well-equipped library on ekistic subjects provides an environment for scholars to undertake research on various aspects of the arts and sciences of human settlements. In addition to publishing EKISTICS, it also publishes *The Ekistic Index*, a computerized quarterly bibliography of periodical articles, and several series of research and documentation reports.

Among others, the following four major research projects have been documented in monograph form:

- "The City of the Future"
  (ACE Research Reports 1, 2, 3, 5, 7, 9 and 10)
- "The Capital of Greece"
  (ACE Research Report 8)
- "The Human Community"
  (ACE Research Reports 4 and 6)
- "The Ancient Greek Cities"
  (Ancient Greek Cities Reports 1-23).

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Cover: Adaptation of figure 1, "Core themes for environmental education," found on p. 259 of this issue

The editor's page

Over a year and a half ago we began to work on this issue of EKISTICS. At that time Jaqueline Tyrwhitt, our consultant editor, had just completed working with a group of Asians on the plans for a new town in North Borneo. She was full of the enthusiasm engendered by this bright young, hard-working group of professionals and felt, after years of concern for planning education in Asia, that the local institutions were beginning to emerge as important forces. Her hunches needed substantiation; and if supported, documentation. We were looking forward to Habitat in 1976 and decided to report on education relating to human settlements in an issue of EKISTICS available at that conference.

The need for information on education for human settlements was also suggested in a letter from Christopher Benninger who wrote: "Many people write to ask me about our architecture and planning school in Ahmedabad. I am also very interested to know about activities in new schools in developing countries — what they call planning and how they go about teaching it; what kind of students, courses and faculties they have. I think EKISTICS might put together an issue on planning education in the less developed countries."

We circulated this idea to our Editorial Advisory Board and Correspondents. Barbara Ward was quick to lend her encouragement. Richard Meier of Berkeley pointed out all the difficulties of collecting data on countries where "the budget for postage is sometimes so small they could not afford to send a sheaf of paper." Many of our correspondents provided us with names and addresses of people who could provide us with information or appropriate articles. Within the United Nations, we received encouragement from Wilson Garces at the Center for Housing, Building and Planning and Eric Carlson at UNEP. Additional programs were identified by William Mann of US AID.

With this support, and despite language barriers and postage expenses, we have been pleasantly surprised by responses to our inquiries from all over the world. Rebecca Packard and I synthesized the data from questionnaires in a review article in this issue. Some of the papers supplied are being included in the issues of EKISTICS on the appropriate subjects. But little of the material actually discussed the central topic, education relating to human settlements in the less developed countries — and there certainly wasn't enough for a whole issue of EKISTICS.

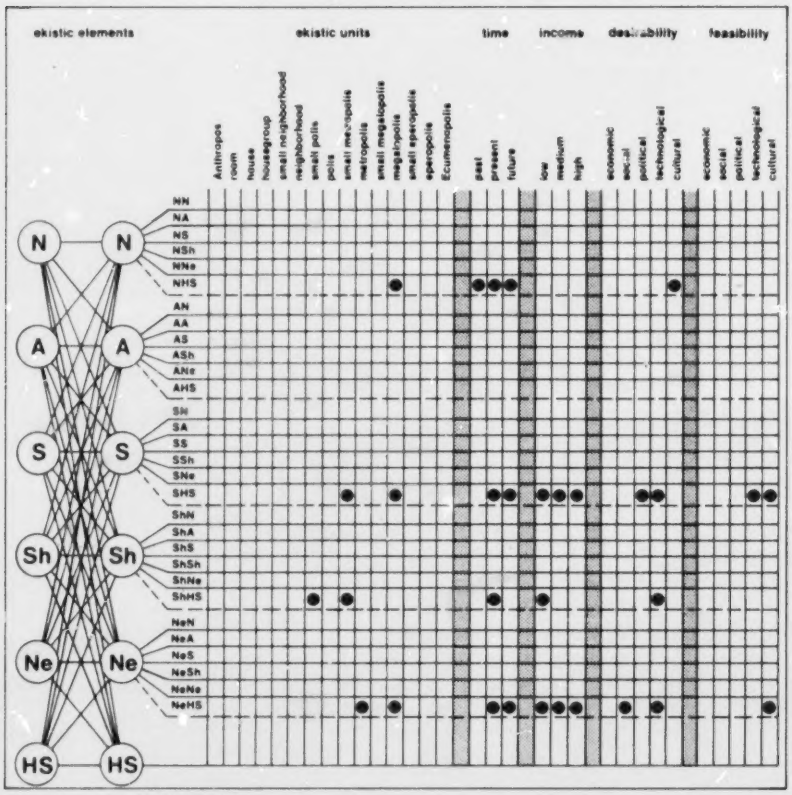
Two fortuitous circumstances brought other material to our attention which transformed the issue into an overview of ekistic education. Alexander Christakis, a member of our advisory board, suggested that we collaborate with Walter Bogan, director of the US Office of Environmental Education. This has turned out to be highly appropriate as not only is the definition of environmental education in the US statute specifically inclusive of human settlements, but a review of the program undertaken at the University of Arizona used the ekistics classification scheme.

The other circumstance was a meeting of the Executive Committee of the World Society for Ekistics at which the issues of EKISTICS that were being directed toward Habitat were reviewed. This group recommended the inclusion of a report on the education program at the Athens Center of Ekistics, because the lessons from this early experience could provide useful guidelines for future programs.

For me, the last year and a half of exploration of material on education relating to human settlements has shown what a powerful tool ekistics provides. C.A. Doxiadis has left us a classification scheme useful for

organizing knowledge about human settlements and establishing appropriate education programs. I feel rather like the child who reported on a class project on photosynthesis. The teacher had started two identical plants. One was in a paper bag and the other out in the sunlight. The one in the sun was puny and sickly while the one inside the paper bag thrived because the species was meant for shade. The child's report started, "We learned something we weren't supposed to learn but the teacher said it was OK anyway." In EKISTICS, we were able to report on human settlement education, not only in the less developed countries but as it can be applied more generally. To those only expecting the former, I hope it is OK anyway.

The Anthropocosmos model



Adapted version of model for EKISTICS

The articles on education programs for human settlements deal with the problem of synthesizing the knowledge on this subject. On the Anthropocosmos model, this is shown by the concentration on the last subhead of each element: NHS — Nature and Human Settlements; SHS — Society and Human Settlements; SHHS — Shells and Human Settlements; NeHS — Networks and Human Settlements. It is noticeable that the education programs reviewed in this issue do not specifically deal with Anthropos and Human Settlements. Implicitly, however, many of the education programs reviewed have been designed to better the condition of people in human settlements.

Different articles emphasize the design of model educational systems (desirability) and report on the accomplishments to date in the establishment of training courses relating to human settlements (feasibility).

A holistic perspective for environmental education

This article is derived from working papers of the US Office of Environmental Education. The ideas expressed do not necessarily reflect the opinions of that office.

> *I know of no safe depository of the ultimate powers of the society but the people themselves; and if we think them not enlightened enough to exercise their control with a wholesome discretion, the remedy is not take it from them, but to inform their discretion.* (Thomas Jefferson, September 28, 1820)

> *The Congress, recognizing the profound impact of man's activity on the interrelations of all components of the natural environment, particularly the profound influences of population growth, high-density urbanization, industrial expansion, resource exploitation, and new and expanding technological advances and recognizing further the critical importance of restoring and maintaining environmental quality to the overall welfare and development of man, declares that it is the continuing policy of the Federal Government in cooperation with State and local governments, and other concerned public and private organizations, to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic and other requirements of present and future generations of Americans.* (Sec. 101, Declaration of National Environmental Policy, National Environmental Protection Act, 1969).

The Environmental Education Act in this context thus provides a necessary counterpart and instrument for achieving meaningful implementation of the national environmental policy (table 1). Its goal is to develop the basic educational resources and opportunities required for citizens to acquire the knowledge and skills which will enable them to participate in the decision-making process, whether it be at local, state, regional, national or global levels.

If the hard decisions are to be made by society as a whole, then more effective communication is needed among citizens and lawmakers, professionals and laymen, and between all sectors of interest in the society. The challenge to the Office of Environmental Education is to develop resources and strategies for more effective education of the adult working and voting-age population as well as for formal training programs.

The design and implementation of resources and learning activities for the adult requires the serious reexamination of the processes through which adults, as contrasted with children, learn most effectively, where the ultimate purpose of the educational experience is in large measure reeducation for survival in a world of increasingly complex demands and interdependency among factors which contribute to the quality of human life.

Similarly restructuring formal educational programs also requires study of the basic principles. Ralph B. Tyler[1] has examined this process of educational reform from the perspective of modern learning theory and practice and provides a rationale for an integrated, holistic approach. He poses the major questions which must be addressed by the educator, curriculum developer, teacher and the broader community, if an educational program is to be planned for some specified purpose and if efforts for continued improvement are to be made (table 2).

All too often, particularly in formal education systems, basically sound contextual and substantive instructional objectives, for environmental education purposes, are merely superimposed or added on to existing curricula and operational structures, for which the objectives and strategies are usually more circumscribed, and sometimes competitive, or even contradictory. For example, many proposals will describe learning objectives which constitute understanding of the complex social, economic and environmental causes and consequences of water pollution, then proceed to outline a plan for minor modification of the biology curriculum, by a team of teachers (to be selected), representative of various disciplines, who will meet for six weeks over the summer.

Beyond the idea

The idea of environmental education is well known and widely supported but its implications and characteristics have been somewhat elusive and less than clearly understood.

Table 1
Extracts from the US Environmental Education Act P.L. 93-278

1. "The term 'environmental education' means the educational process dealing with man's relationship with his natural and man made surroundings, and includes the relation of population, pollution, resource allocation and depletion, conservation, transportation, technology, economic impact, and urban and rural planning to the total human environment."
2. "Emphasis shall be placed on the development of skills and insights needed to understand the structure, requirements, and impact within and among various environmental entities, systems and subsystems."
3. "... financial assistance will be provided for projects involving participants in inquiries into both the specific and general environmental implications of human activities and their short- and long-range effect on societal resources and general public policy."
4. "Thus the environmental education process is multifaceted, multidisciplinary, and issue- or problem-oriented. Otherwise worthwhile but specialized and narrowly defined educational approaches ... which normally tend to exclude consideration of mutually reinforcing social, physical, cultural, and policy implication ... do not adequately meet the scope and purposes of the act."
5. "The project will help participants recognize the immediate and long-term environmental and education impact of personal and occupational decisions and policies (eg, local, national, and international implication)."
6. "... the process of environmental education helps the learner perceive and understand environmental principles and problems ... identify and evaluate the possible alternative solutions ... and assess their benefits and risks."
7. "Each environmental education activity partakes of particular aspects of these areas [disciplines, institutions, environmental concepts and problems], fusing them in a manner that makes a great comprehension and understanding of contemporary environmental issues and problems possible by bringing about deeper awareness of relevant interrelationships ...."
8. "Environmental education activities ... demand as well that the tools of the various disciplines be used in a highly integrative manner."
9. "The areas [environmental inquiry] themselves are separately defined for the sake of convenience only; in reality, they are all interconnected. It is this interwoven quality and the balances and relationships among areas that environmental education deals with."
10. "One of the chief goals of environmental education is to help us learn how to proceed as a society toward a condition of 'productive harmony' with our environment ...."
11. "Such a process can give us the knowledge to change course where necessary, minimize undesirable effects, and maintain a dynamic, productive, and healthy relationship with our environment."

The act emphasizes the following points:

- A concept of environment which includes the entire experiential milieu of man, encompassing all things, both abstract and concrete — society, institutions, the plethora of artifacts created by man through his technologies, the forms of collective experience we call cultures, ways of life, history, and the accumulated dreams and memories of people.
- The interrelatedness of "systems" aspects of environment, environmental problems, and environmental impact.
- The need for policies concerned with long-range or future consequences as well as immediate impacts of plans and activities on environmental quality.
- The need to consider psychosocial, economic, cultural and other subject (man-centered or perceived) factors in addressing physical environment problems.
- The need for informed public participation in and support of policies and programs concerned with environmental quality.
- The need for new educational approaches capable of dealing with holistic problems in holistic contexts.

Educators, not unlike other technical experts, must make use of the best thinking and tools of all professions, disciplines and groups in identifying

Table 2
Basic principles of curriculum and instruction (after Ralph B. Tyler)

1. What educational purposes should the school seek to attain?
   - Studies of the learners themselves as a source of educational objectives
   - Studies of contemporary life outside the school
   - Suggestions about objectives from subject specialists
   - Use of philosophy in selecting objectives
   - Use of a psychology of learning in selecting objectives
   - Stating objectives in a form to be helpful in selecting learning experiences and in guiding teaching
2. How can learning experiences be selected which are likely to be useful in attaining these objectives?
   - Meaning of the term "learning experience"
   - General principles in selecting learning experiences
   - Illustrations of the characteristics of learning experiences useful in attaining various types of objectives
3. How can learning experiences be organized for effective instruction?
   - What is meant by "organization"
   - Criteria for effective organization
   - Elements to be organized
   - Organizing principles
   - Organizing structure
   - Process of planning a unit of organization
4. How can the effectiveness of learning experiences be evaluated?
   - Need for evaluation
   - Basic notions regarding evaluation
   - Evaluation procedures
   - Using the results of evaluation
   - Other values and uses of evaluation procedures.

and synthesizing what is known, and create fertile ground for the "invention" of new knowledge and experience — for innovation. The synthesis, if it is to be meaningful either intellectually or operationally, must have a context, a structure.

An example of the relevance of context and structure in achieving the purposes of environmental education is the seemingly insurmountable problem encountered in attempting to approach the broader concerns of environmental education from the perspective of the "man-made" environment. While the specific problems are many and varied, a prevailing factor is the inadequate treatment (or inability to determine an appropriate treatment) of man as an integral part of, but primary concern in the study of the environmental complex. Efforts have ranged from the view of man as an element of no greater or lesser importance than trees, flowers, air, water, and so on; man as the manipulator, owner and master of his surroundings; to man as the polluter or problem in an otherwise good if not perfect place or world. In the absence of context, these and any other views are equally valid but equally useless for educational purposes.

But promising approaches are evolving and being tested in a number of fields. Particularly in realms of planning and geography, conceptual structures which seem to possess the interdisciplinary u' ity and transferability required for environmental education have emerged.

Organizing concepts

In *Toward a General Theory of Planning*, H. Ozbekhan[2] provides an overview of the epistemological foundations and characteristics of an approach to planning which synthesizes an anthropocentric view of world order with the holistic structure and methodology of general systems theory. Ozbekhan analyzes the failure of the technoscientific approaches, which predominate our present perception of reality and are still largely governed by the world view of nineteenth century industrialism.

Ozbekhan examines the hypotheses of a new conception of world order and the relationship of man/environment which provides a possible framework for pursuit of rational action toward effecting changes in the environment which are favorable to man. Asserting that the environment, or reality for present and future mankind, is primarily of our own making, it becomes necessary, for purposes of perceiving and correcting undesirable imbalances in the dynamic interrelationship of man and environment, to conceive a purpose and structure for this interactivity which goes beyond the idea of ecology and biological processes and assigns organizing function and primacy to human potential for self-correcting action according to valued ends. Again, such an approach seems to be within reach through the principles and constructs of general systems theory.

Achievement of environmental education goals occurs at the normative and purposive levels through interdisciplinary and transdisciplinary innovation.[3] Typically, it focuses on large social and man/environment systems, ekistics, and a variety of "joint systems" of society and technology. Few of the domains at this level have yet found valid frameworks — ekistics may be farthest advanced in this respect — and the current concepts of law and macro-economics hardly meet the interdisciplinary challenge posed to them in the technological era. It is at this level that the broad conceptualization of man's active role in shaping his own and the planet's future enfolds.

The "organizing language" ought to be anthropology in its most profound sense, the science of how to create an anthropomorphic world and how mankind may become capable of surviving dynamically changing environments. That most of anthropology today is not much more than an empirical behavioral science illuminates drastically the confusion created in modern sciences by the traditional cultural postulate of "knowledge per se" and the corresponding emphasis on empiricism.

It appears futile to discuss what, in the education/innovation system, should be called science and what not. In a narrow, positivistic sense, the notion of science applies only to the lowest systems level. Whether this science is organized and coordinated again by science or by categories of thought, which are given other names, is a matter of arbitrary definition.

The horizontal "organizing languages" of logic, cybernetics, planning and anthropology, in order of increasing systemicity, intermesh with the vertical "organizing languages" of general systems theory (deductive) and organization theory (inductive). If the education/innovation system is viewed as a purposive system for the self-renewal of society, we should, in Ozbekhan's words, "be able to investigate in a more orderly way than has hitherto been possible, whether methodologies arising from anthropology and general systems theory — both of which deal with phenomena that pertain to whole groups — might not be forged into a methodological structure for planning." With such a structure for planning it will then be possible to link the normative, pragmatic, and empirical levels in an interdisciplinary way and ultimately aim at a genuine trans-disciplinary coordination, that is, at managing the education/innovation system in an integral way.

Human settlements

To be concerned with the man-made environment as defined in holistic thinking and emerging models for planning and education, means addressing squarely the problems and issues inherent in the process of urbanization or otherwise altering patterns of human settlement and social structure. Spencer Havlick, in *The Urban Organism*[4] — building on the holistic conceptual structure of ekistics — describes the significance and implication of regarding the large city as a "natural" resource, that in the absence of wise interdisciplinary conservation

measures is threatened with extinction — for which the consequences to society and quality of human life would be pervasive and profound. By viewing urbanization as a dynamic process through which materials, people and ideas are synthesized and transformed for man's use and service, it is seen that urban organism yields certain, presumably highly valued, utilities to man in the form of goods, services and reservoirs of information otherwise unavailable in scattered settlements. Havlick stresses the importance in this conception of "urban conservation" of regarding people and man-made systems and aspirations as an integral part of the urban organism as well as its beneficiaries. It thus becomes imperative for education in the broadest sense to equip the citizenry with the knowledge, skills and experience to participate meaningfully in decision-making influencing management of resources for man.

Ever since Kuhn wrote his *Structure of Scientific Revolutions* (1962)[5] social theorists have been using the concept of alternative paradigms to juxtapose different ways of perceiving and interpreting reality. Unfortunately, no widely accepted paradigm for inquiry on human settlements development has yet emerged. Lacking any acceptable theory which is more than a convenient and simplistic integration of perspectives borrowed from sociology, political science, architecture, and other disciplines, both scholars and builders are at odds on how to interpret and appreciate the complexity of the human settlement morphology.[6] In the absence of a contemporary paradigm for inquiry, they resort to a rationality dominated by economic growth, and wasteful use of human and natural resources, at the expense of humanistic goals and ideals guided by the ecological and self-realization ethics.

The ability, however, of the dominant economic rationality paradigm to bring about a truly *humane* settlement is held increasingly in question. There appears to be a contemporary view of the societal situation, as represented for example by the Environmental Education Act discussed previously, which seems to be based on the following two interrelated assumptions:

- *Assumption 1:* The world is becoming *rapidly* more and more interdependent and intersensitive; one way of visualizing this phenomenon is through the "image of the future" represented by the Ecumenopolis of C.A. Doxiadis[7] which is gradually becoming a reality. However, the convergent crises of worldwide inflation, the ideological schisms, the energy crunch, and the looming food shortages may represent insurmountable barriers to the emergence of a global symbiotic and heterogeneous human settlement.

- *Assumption 2:* To surmount the barriers to the emergence of Ecumenopolis we need to invent new concepts, new methods, and new institutions. We need, in other words, a new policy science paradigm that will facilitate the transition from an era dominated by economic growth rationality, wasteful consumption, and meaningless affluence, to an era of anticipatory democracy, cooperation (symbiosis), and restraint.

In the context of these two assumptions, the implications of the act are that citizens, decision makers, and policy makers must internalize the contemporary situation as represented by such geographic phenomena as the emergence of a number of megalopolises throughout the world. To understand, explain, and plan the quality of life within these new entities we need a contemporary methodology. Ekistics, as the new science of human settlements, represents a new paradigm.

The rapid concentration of people into megalopolises has to some degree aggravated and produced many of our continuous urban problems of congestion, pollution, ill health, crime, loss of community identification, and governmental fragmentation. While we seem to be tending towards much greater levels of population agglomeration, opinion polls inform us that an absolute majority of the Western people would prefer to live at a much smaller scale of community. Thus, a major dilemma emerges: on the one hand, projections suggest continued growth of population concentrations; on the other hand, there are indications that these trends are neither preferred nor perhaps desirable for the quality of life of a substantial proportion of the people.

When we ask if there is an "optimum" city size, we are really asking: what is the urban scale most conducive to the realization of some desired quality of life? Since the reality perceptions of people's desirable life styles are diverse, it follows that the policy planning process should be embedded into a nested hierarchy of human settlements (as represented graphically by the ekistic grid) that satisfies the needs and values of all people.

Megalopolises offer desirable life styles — such as socioeconomic diversity, cultural options and amenities, anonymity, and opportunities for personal achievement — for many people. For others, they represent undesirable entities because they give rise to such attributes as underlying homogeneity yielding a superficial diversity, alienation of the citizenry, too much competition, and so on.

Assuming that large complex population agglomerations, such as megalopolises and eventually Ecumenopolis, represent the inevitable settlements of the future (as some people, including Doxiadis, claim), the principal issue is how do we proceed to adapt our institutions and our methodologies in order to better plan the life styles of the generations that will be living in these large complex systems.

In a recent report prepared for the National Science Foundation by the Stanford Research Institute, a number of very interesting properties for large systems have been identified by the researchers:[8]

- Large systems may grow to a point where they yield diminishing returns to scale — particularly when considered from an overall socio-economic perspective;
- Large "successful" systems, premised upon plentiful resources, can become unsuccessful when confronted with scarce resources;
- As system size increases, interdependence increases and, in turn, vulnerability of the system to damaging perturbations increases;
- The highly specialized work roles implied by the division of labor found in large urban systems may contribute to worker boredom, absenteeism, lowered productivity, and lower product quality;
- Large systems are generally complex and that complexity, in turn, limits the rate of effective acquisition and use of knowledge.
- As the effective comprehension of highly complex issues becomes more difficult for the policy maker, decision maker, and citizen, increasing reliance is placed upon specialist/experts, that is, pe.sons who are essential to the system but are not responsible and accountable.
- For those who cannot specialize, given their mandated broad focus of concern (for instance, the mayor of a city), complexity reduces the comprehensibility of the system being governed and increases the likelihood of attempting to employ simple solutions to solve difficult problems.

Given the continuously increasing complexity of human settlements, a reasonable course of action is to design and implement a learning system capable of dealing with complexity.

Ekistics and environmental education

Ekistics, as the science of human settlements, is dedicated to improving our ability to understand, explain, appreciate, and share our contemporary human settlement reality situation. In order to achieve this objective we must begin to operationalize through legislation such as the Environmental Education Act the following two propositions:

1. **Human settlements are fundamentally different entities (or systems) from the physical or mechanical systems with which traditional science and engineering have largely concerned themselves;**
2. **The methodology for human settlement development must differ substantially from the methodologies applicable in more conventional disciplines such as economics, architecture, and law. In fact, the methodology should transcend disciplinary boundaries and must be based on a process of public participation linked to an instrument for explicating and integrating diverse reality perceptions.**[9]

These two propositions represent a very significant agenda for ekistics. Since the science of human settlements can embrace all the diverse epistemologies which manifest themselves at different geographic locations of the globe, we can envision the gradual establishment around the globe of diverse cultural networks symbiotically interconnected through a common language.

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Environment-based environmental education

This article was abstracted by the editors of EKISTICS from Environment-Based Environmental Education: Inventory and Analysis, *the final report prepared for the Division of Technology and Environmental Education, United States Office of Education, contract no. OEC-7408739 by the staff of the Environment-Based Education Project, Center for Environmental Studies, Arizona State University. The project was carried out jointly by Arizona State University and the Association of American Geographers.*

Environmental education can be most effectively defined, communicated, and learned by developing core themes and a conceptual structure that synthesizes and integrates pertinent subject matter across and between a variety of traditional disciplines.

The single most disturbing criticism of existing environmental education, and one which probably has done more to restrain development of the field, is the claim that environmental education does not possess core methodologies and themes which make it distinctive from the disciplines that surround it. This is probably valid insofar as a large proportion of what purports to be environmental education is really an aggregation of vaguely related subject matter from other fields. In the larger view, however, this position may be a red herring that is distracting the environmental education community from establishing clear-cut programs on a broad front. Time and again the cry for integration is heard, but very few people or institutions seem to be getting down to the business of defining and utilizing those themes.

There is a large body of literature which expressly addresses the missing themes of environmental education. It is prominent, for example, in a century of writing in geography, ecology, and planning. The key words in these works are often the same that figure so significantly in the US Environmental Education Act and its interpretations: "integration" and "synthesis." The problem historically has been one of finding effective methodologies to "integrate" and "synthesize" in a meaningful way.

To identify the core themes of environmental education is also to identify already-existing themes that have been posited at a broader level. It is useful, therefore, briefly to assess the larger world view in order that environmental education be placed rationally within these contexts.

The history of learning is replete with examples of the convergence of innovation and goals on certain critical themes and ideas. Thus, what at first is fragmented and isolated — and often hidden by disciplinary barriers or lack of receptive audiences — may suddenly gain currency through interdisciplinary cross-pollination, publications attractive and comprehensible to the larger public, and the need of scientists, managers, and decision makers to find more viable models or methods to accomplish their work.

The rapid diffusion of Darwinian principles and perspectives is an excellent example of one idea whose time had come and which quickly spread from biology to be incorporated into such diverse fields as climatology, geomorphology, and political science. Indeed, the concept of evolutionary, organic growth was eventually held responsible for everything from Nazi Lebensraum policies to climatic change.

More recently, in the writings and research of the 1960s and 1970s, much effort has focused on the development of new models and frameworks which might provide foundations for the understanding and manipulation of processes and phenomena in both the natural and human realms. The hearths of these activities are often identified with disciplinary bases (such as mathematics, engineering systems control, biology, economics), but in reality the most useful results have been those which have a high degree of transferability and can be operated effectively within an interdisciplinary context. By either intent or accident, the innovators have strengthened the foundations and potentials for interdisciplinary effort.

Five core themes of environmental education

Environmental unity: Environmental unity — that concept which states that all processes and elements of environment are interrelated and interdependent, and that change in one leads to a change in all others — is the most long-lived core theme in environment-related studies. This theme has been the essence of the naturalists' and the environmental scientists' message from THOREAU (1850) and MARSH (1864), through *Man's Role in Changing the Face of the Earth* (THOMAS, 1956), to COMMONER (1967, 1971) and WARD and DUBOS (1972). It is the underlying foundation for hundreds of geography and ecology courses at all levels and has been variously manifested in regionalism, land-use studies, and planning. Most significantly, environmental unity has been the driving, underlying concept in practically every version of conservation, environmentalism, or modern resource appraisal.

Environmental unity remains the most commonly accepted theme of environmental education. Unfortunately, the theme is given more lip service than substance — except insofar as it appears within interdisciplinary aspects of natural sciences such as ecology or physical geography. The important roles of man and man-built environments in the environmental complex has tended to be supplementary rather than integrative; that is the roots of environmental unity remain in the natural and physical science firmaments.

One reason that a successful integrated (man/land) version of environmental unity is not in common use is that there has been difficulty in deriving a systematic, integrating methodology. Witness, for example, the partial failure of earlier efforts at regionalism in geography and area studies programs nationally (BURTON, 1963; KOHN, 1970; MCNEE, 1967). It now appears that implementation is more realistically possible by virtue of more recently developed methodologies, especially those expressed in general systems theory and energetics. Thus, it is believed that this core theme: (1) must be sustained; (2) must be expanded to include man and his works in a meaningful and understandable way; (3) should remain one of the major foundations of environmental education; and (4) should be presented in the context of newer, systematic (rather than fragmented) concepts.

The general systems approach: It is recognized that there are at least two levels at which to view and utilize systems. On the first level, and the one that is perhaps most generally applicable to environmental education, the systems approach has its greatest value in providing a rationale and means whereby complicated systems (such as environments) can be logically defined and described — thereby forcing the teacher/student to identify the significant elements and interactions within the system. This approach can be used by almost anyone if it is presented according to the rudimentary cybernetic objectives originally cited by WIENER (1948); inputs, process, outputs, feedback, and controls. The "attributes" of the system (what is in the boxes) and the "relationships" of the system (linkages between the boxes) are relatively easy to define at the descriptive level.

A second and more sophisticated level requires rigorous use of mathematical tools, matrix algebra, and linear programming. This approach is exemplified by the professional who uses systems analysis for problem solving. This is also important in the resolution of environmental problems and provides an excellent medium for teaching research design which leads to identification of environmental alternatives and a rationale and anticipatory decision-making process (MESAROVIC and PESTEL, 1975). Its uses, however, will characteristically fall into the advanced classes and programs.

General systems principles — of which information flow is a subset critical to environmental analysis — is essentially the idea of reposing problems in terms which permit alternative ways of perceiving reality (MEIER, 1962; SHANNON and WEAVER, 1949). Systems principles and methods have the distinct advantage that they are highly transferable from discipline to discipline or can be used between disciplines. In addition to this horizontal transferability, they can be applied vertically (with varying degrees of sophistication) to different age or learning levels.

The use of systems methods, both in the design of environmental education curricula and the structural organization of those curricula, has also presented certain economic advantages. The approach is economically sensible because (1) it promotes synergistic efforts which eliminate unnecessary redundancies of intellectual effort and human energy, and (2) it promotes dollar savings through the elimination of organizational and disciplinary redundancies. Finally, and perhaps most importantly, the systems approach enhances the identification of a maximum number of alternative choices in environmental decision making.

Because this new "interdiscipline" is not so much concerned with drawing boundaries around existing disciplines, but with extending their territories so that they overlap and interpenetrate each other, it stimulates a more effective synthesis of knowledge.

Energy flow: Energy is at the same time one of the most venerable and most rapidly expanding themes for man. Practically every discipline has been concerned with the workings and quantities of energy that are present in the world — but specifically from the perspective of each discipline. Thus, the physicist may be interested in energy as a potential or kinetic ability to do work, which explains the movements of planetary bodies or the mysteries of quantum mechanics. The average citizen has historically viewed energy as something he or she has or has not got a lot of, and more recently, as something related to an exhorbitant utility bill and an impending crisis. The biologist, on the other hand, may see energy in terms of photosynthetic

Fig. 1: This figure illustrates core themes of new concepts and principles which have affected the perceptions of decision makers regarding their environmental world views, ranked in a hierarchy of inclusion. The three vertical columns represent the three-level categorization of systems, the ekistical view, and the excerpts from PL 91-516 (the US Environmental Education Act). The horizontal column describes environmental education. The cross-related elements are (1) core themes (replacing the traditional view), and (2) an inclusive schematic model which incorporates all of the above.

	Core themes	Ekistic view	PL 91-516	System model
Techno systems	3. ENERGY FLOW AND ENERGETICS 5. HUMAN SETTLEMENTS 4. ECONOMICS	*Shelters* Housing, community facilities, city centers *Networks* Public utility systems — water, power, sewerage Transportation systems — road, air, rail Communication systems, computer and information systems, physical layout (plan)	Pollution Resource allocation Technology Transportation Urban and rural planning	SHELTER SYSTEMS NETWORKS SYSTEMS
Human systems	2. GENERAL SYSTEM PRINCIPLES	*The Individual (Man)* Physiological needs, safety and security, affection, belonging, esteem, self-realization, knowledge and esthetics *Society* Public administration and the law, social relations, population trends, cultural patterns, social hierarchy, economic development, health and welfare	Population Economic impact	INDIVIDUAL SYSTEMS SOCIAL SYSTEMS 5. HUMAN SETTLEMENTS 4. ECONOMICS 3. ENERGY FLOW AND ENERGETICS 2. GENERAL SYSTEM PRINCIPLES 1. ENVIRONMENTAL UNITY
Natural systems	1. ENVIRONMENTAL UNITY	*Nature* Climate, water, soil, plants, animals, geology, topography, environmental analysis, resources, land use	Conservation Resource depletion	NATURAL SYSTEMS

processes or the biomass gains and losses that may be traced through a given food chain, while the economist may view energy by way of capital and operational costs in production and delivery systems.

Yet, suddenly energy has become a focal theme for a diverse population. This heterogeneous population — which may be in business, scientific, or consumer sectors — probably does not even hold common definitions for energy and uses the expression with a variety of nuances. The average nonscientist, for example, is probably confused by such terms as "latent energy" and "chemical energy" and is likely to believe that energy is some kind of "stuff" — that is, an element or phenomenon rather than a process. Nevertheless, there are common attributes of energy that are becoming more generally recognized. Firstly, regardless of the type of energy (for instance, chemical, radioactive, mechanical, heat or the materials through which it is flowing or in which it is stored, energy can be described and explained in a common language; that is, the units by which it is measured. Secondly, it is common to all materials and organisms that energy is stored, used, and/or flows through them.

Lastly, there is a third point that energy may be viewed as a "forcing function" in essentially every area of nature, human activity, and man-built environments. Climatologists, for example, will argue that the earth's atmosphere system is driven by solar energy and the behavior of the earth's energy balance. The zoologist will account for biomass in terms of energy consumed and expended, while the transportation industry is literally dependent on the transformation of energy to propel all vehicles.

Taking these three commonalities into account, fewer educators are worrying about energy only from their own personalized perspectives, and are instead using energy flow models to explain a variety of integrative, environmental processes and phenomena. Thus, both the carbon and life cycles, for example, can be explained in energy-dependent terminology.

Further development of an energetics core is recommended because it not only provides a theme focus, but also because it provides a conceptual perspective, which combines the principles of general system theory, the analytical techniques of economics, and the basic laws of the physical sciences. Furthermore, it provides a rational basis of policy and decision making through the ability to integrate, correlate, and quantify complex factors in a single analytical framework, using energy as the basic unit of analysis.

Economics: Considering that economics plays an overwhelming role in political and environmental decision-making processes, it has been a tardy discipline entry into the environmental field. Part of the blame must be placed on the economists themselves; in academic realms, for example, few economists have considered the environmental area sufficiently important to occupy their time. Conversely, environmental advocates and/or managers have often considered economic costs as trivial barriers to environmental and conservational accomplishments.

However, the necessary melding of environment and economics is now finally on the horizon, and it is, therefore, appropriate that economics serve as a thematic core in environmental education. It has the advantage of expression through system methodologies, can be treated through a process orientation as in cash flow, and cost/benefit analysis is a common denominator in almost any environmental decision-making process. Furthermore, the assessment of environmental economics is one of the best ways to develop integration between natural and socioeconomic systems, while orienting the educational process to both issues and decision-making alternatives.

Human settlement: Human settlement is the most complex, integrated system involving man and the environment — and it is through settlements that man has most dramatically impacted and altered the face of the earth.

If urban sites are the focus of the greatest human activity, they are also the nodes of the greatest cultural and environmental disturbances. Cities are the sources of the heaviest production, concentration, and diffusion of pollution; as well as the greatest disturbances of run-off and drainage, climate, soils, topography, and fauna and flora.

The man-built environment has literally reordered and restructured the natural scene, but the man-built environment of human settlements also exerts its own environmental impact on the behavior of the inhabitants and the ambience in which they function. Thus, the ways in which humans plan, construct, and manage their settlements affects both the emotional and physical environments for the inhabitants.

Although the human settlement is obviously a major connective thread in environmental education, it has usually been addressed implicitly. It has been stated that for environmental education generally, the greatest emphasis has been placed on the natural and physical sciences, with least attention given to socioeconomic and political areas. The evolution of our knowledge and study of settlements, however, has been occurring in exactly the opposite way. There is, not surprisingly, a large literature concerning the structure and form of settlements and the behavior and location of people in them (e.g., DOXIADIS, 1968; ELDREDGE, 1967; GOTTMANN, 1961). Only recently has the physical and natural setting been given serious consideration or integrated into our understanding of human settlements (STEARNS and MONTAG 1974). The utilization of a human settlement core in environmental education must focus on such man/environment syntheses.

It is also clear that greater emphasis is now being placed on the qualitative aspects of human

settlements. This was emphasized, for example, at the 1972 Stockholm United Nations Conference on the Human Environment; and the 1976 Vancouver United Nations Conference on Human Settlements will address general and scientific knowledge of this issue as a thematic focus.

Thus, the human settlement theme is an appropriate one in both conceptual and applied terms. It can be formulated within either a systems or economic framework, and is related to a number of important subthemes of environmental education such as land use, pollution, and population.

It is important to note that the human settlement theme, as with all the other themes that have been cited, may stand alone as a focus for environmental education programs or activities. But most effectively, each of the themes can be interrelated to the others through a rational use of systems methods.

Environmental world views

Varying perceptual world views such as those recently reported in "Ecophilosophy and Ecopolitics: Thinking and Acting in Response to the Threats of Eco-Catastrophe" (KVALOY, 1974), portend major cultural conflict regarding environmental policy, issues and educational structure at the world scale.

World View One — Natural environmental unity, internal subjective emphasis, natural systems emphasis: The essence of World View One is that nature (or natural systems) subsumes man and his activities within an undifferentiated system where part and whole are factors that are irreducible. Irreducibility is one of the classic descriptors of reality in philosophy. The similarities of the whole/part may be perceived as (1) an acceptance of integration in the primitive case (such as an infant's world view), or (2) a rediscovery of wholeness by operatives in a fragmented world (for instance, retreat from disciplinary bases). Simplification and integration predominate, and "environmental" education is seen as consciousness change to an integrated state. While this world view does not immediately appear to have high relevance for environmental education, it might be noted that this perception has appeared as "getting back to" the earth, "returning" to the basics, "flight" to the wilderness, and other highly symbolic metaphors for leading an integrated life.

World View Two — two-part environmental differentiation, external objective emphasis, human/cultural systems emphasis: In this world view almost all ecological or environmental issues boil down to direct dialectics between the individual and the larger group in a classic descriptor of duality. This dualistic model relies upon a highly differentiated, objective, and analytic emphasis. It contains decomposable systems where the interdependent parts function *as if* they were interdependent of each other. Segmented, partial, and exclusive perceptual modes towards language environmental education, and objective science, predominate. Competition, winning and losing sides, and formal hierarchic models of organizational structure dominate — in which case, environmental issues and solutions are seen in terms of conflict and/or control.

World View Three — three-part environmental integration, internal subjective emphasis, human/cultural and natural systems emphasized: In World View Three there is a conscious attempt to integrate man with nature in the most basic ways and remove the thinly disguised dichotomy (World View Two) that ignores this fundamental integration and forces a choice between man and natural systems. Focus on natural systems and reintegration of the social sciences in relation to the natural sciences causes mutant forms of information and conceptualization (such as the transformation of animal psychology to ethology). In more immediate terms, environmental education is viewed as "crisis-oriented" behavior focused on immediate events and short-term solutions. Focus on long-term, long-range, integrated policy/place development is minimal, while problem-focused emphases begin to restructure those sectors of knowledge formerly differentiated into short-lived "task forces" of multidisciplinary complexion.

World View Four — four-part environmental differentiation, external objective emphasis, technological systems and human systems dominate: This world view is strongly manifested by the majority of industrially "product"-ive leaders. As an almost archetypal model of inductive fragmentation, the parts (disciplines, departments, bureaus, municipal governments, individuals, corporations, and so on) tend to operate independently from each other without cohesion or concept of the whole. Here, the shared ideological paradigm of such institutions contributes to knowledge obtainable primarily through the analytic decomposition of complex systems into simplistic parts. Strong notions of efficiency, quantifiable growth, environmental simplicity, and exponential processes are fortified by a structurally rigid "formal" hierarchic structure guaranteed to segregate and compartmentalize knowledge.

These highly differentiated structures also rely heavily upon structural authority, guaranteeing that interactions among subsystems remain weak and nearly decomposable. Loss of synergy, "community," and cohesion mark this pervasive world view. Energies are primarily devoted to the tools and technologies viewed necessary to achieve the (externally measured) "good life" concerned with short-run successes. This technolevel paradigm can be discussed as progressive segregation, or progressive mechanization, behavior of elements in isolation, high language differentiation, high intellectual verbalization, and viewing the world as a machine and the natural systems as mining of

resources potentials. While nature as a resource bank was originally perceived as Manifest Destiny, this type of perception leads directly to the ultimate extrapolation of technology and tools far removed from the natural systems from which they emanate; for instance nuclear weapons, electronic simulations, and the visions of advanced medical technology.

World View Five — five-part environmental integration/differentiation, internal and subjective/external and objective emphasis, variable systems integration: In order to cope with and transcend the inherent fragmentation and highly differentiated purposeful systems of World View Four, in World View Five there is an attempt to integrate the technological, the humanistic, and the ecological "imperatives." World View Five begins as a complex system of systems, and matures to the level of attempting to make its wealth available to all parts of the whole system. Marks of this integrative thrust are knowledgeable and aware citizens, unrestricted flow of information, nonprofit corporations, common sense, and processes which generate long-term, creative, harmonious solutions for the community (techno, human *and* natural) at large. This world view — sometimes called the "second naiveté" (MASLOW, 1968) BUBER, 1950), "the world system and human values" (BURHOE, 1971), or the "suitable Gestalt" — has its basis in the underlying positive primary conception of integrated "oneness," or nondecomposable systems.

Once these total interrelationships are identified and accepted, the world looks different to the observer. Antagonisms disappear and are replaced by compensatory actions (corrective and anticipatory). For example, rather than focusing on competitive, social and political viewpoints, states and nations might cooperate in overall environmental policy — such as applies to oceans, the atmosphere, and energy. In short, life takes precedence over death. Here, the issues change context: a new model emerges in the human domain, utilizing technological systems to realign man and his systems in harmony with the world.

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Human settlements education

A survey of programs in the less developed countries

Gwen Bell and Rebecca Packard

The editors undertook this survey in order to assess the status of the educational programs on human settlements in the less developed countries as there was no alternative up-to-date material.

The importance of people training in their own localities to work in the field of human settlements has been continually stressed by members of the planning profession. As long ago as 1915, Patrick Geddes wrote:

> ...each true design, each valid scheme should and must embody the full utilisation of its local and regional conditions, and be the expression of local and of regional personality. "Local character" is thus no mere accidental old-world quaintness, as its mimics think and say. It is attained only in course of adequate grasp and treatment of the whole environment, and in active sympathy with the essential and characteristic life of the place concerned.[1]

Even with this often repeated advice, as late as the 1950s, most students had to go to the traditional centers of learning which offered programs in planning. The few "local" programs that existed were derived from the British concept of town and country planning or were patterned after the US courses in urban and regional planning. These early programs were usually related to departments of architecture. Their primary focus was on physical development which was viewed as a technical vocation.

However, with the recognition of urbanization in the 60s, there was more pressure to increase the number of planners who could participate in the development of the rapidly growing settlements. As a result, in the USA, Europe, Australia, South Africa, Israel and the other so-called rich countries of the 1960s, the numbers of programs multiplied and began to relate to local needs. But there were still few programs in the lesser developed countries. The most frequently discussed methods for obtaining planners have been:

- importing foreign professionals;
- sending students abroad to train; or
- starting an indigenous planning school, or planning department in an already existing institution of higher education.

Importing foreign professionals provides the most immediate results, but often their lack of knowledge about the country, and time and financial considerations keep such foreign experts from tailoring solutions to the problems of the particular country.

Sending students abroad may help them gain insights and techniques, but the benefits do not accrue until the person returns — if ever — and is reintegrated into the society. Furthermore, few programs adequately address themselves to the problems of the poor settlements in lesser developed nations.

Setting up local planning schools, or departments of planning, within already existing institutions of higher education is the slowest course, but ultimately pays off. It is not only cheaper to train planners locally, but also is more likely to provide a relevant education to the local situation. This argument began to be acknowledged in the late 50s and early 60s as planning programs were developed in Africa, Asia and Latin America.

A number of people have attempted to establish broad goals for planning programs in less developed countries.[2] Almost all agree that planning programs should go beyond merely traditional physical planning and be interrelated with the economic and social aspects of their countries.

In the 1970s the emphasis in planning has shifted from merely physical development to concerns about the quality of life and the environment. This more all-encompassing view seems to have shifted the focus from the technical to the human aspects of settlement development.

It is in the countries with a presently low percentage of their population in urban areas that the imminent move from rural to urban areas will make the most profound impact; and the training of people to help cope with this inevitable urbanization process could make a profound difference. These are also mainly the poor countries in Africa, Asia and Latin America — where programs for training about human settlements are needed.

The survey

Looking at these countries we found, on preliminary investigation, 200 institutions of higher learning that appeared to offer a program(s) related to human settlements in the environmental, health, administrative, planning, design, social and engineering fields. Questionnaires were then sent to the identified programs asking about admissions, enrollment, major course, reading requirements, and so on.

Table 1
Respondents to questionnaire on training programs for human settlements

Program*	Location	Year started
Regional and Urban Planning, Departamento de Planeasmiento, Universidad Nacional del Nordeste	Resistencia, Argentina	1971
Department of Physical Planning, Bangladesh University of Engineering and Technology	Dacca, Bangladesh	1969
Department of Geography, University of Yaounde	Yaounde, Cameroon	1970
Instituto de Planificacion del Desarrollo Urbano Universidad Catolica de Chile	Santiago, Chile	1967
School of Planning, Center for Environmental Planning and Technology	Ahmedabad, India	1972
Chandigarh College of Architecture	Chandigarh, India	1961
National Environmental Engineering Research Institute	Nagpur, India	1970
Department of Architecture and Planning, University of Roorkee	Roorkee, India	1957 B. Arch. 1969 M. Arch. 1974 MURP
Department of Architecture, Bandung Institute of Technology	Bandung, Indonesia	1950 Arch. 1972 reformed
Department of Architecture at the Technical Faculty, Parahyangen Catholic University	Bandung, Indonesia	1960
Demographic Institute, Fakultas Ekonomi, Universitas Indonesia	Jakarta, Indonesia	1970
Faculty of Architecture, Surabaya Institute of Technology	Surabaya, Indonesia	1968
Department of City and Regional Planning, University of Tehran	Tehran, Iran	1972
Department of Urban and Regional Planning, University of Nairobi	Nairobi, Kenya	1971
Department of Environmental Planning and the Department of Landscape Architecture, Graduate School of Environmental Studies, Seoul National University	Seoul, Korea	1968 augmented 1973
Social Geography Program, Department of Geography and Earth Sciences, University of Malawi	Zomba, Malawi	1965
Department of Urban and Regional Planning, Universiti Teknologi Malaysia	Kuala Lumpur, Malaysia	1973
School of Housing, Building and Planning, Universiti Sains Malaysia	Minden, Malaysia	1973
Settlement Geography, School of Humanities, Universiti Sains Malaysia	Minden, Malaysia	1972

Continued opposite

Usable returns were received from 35 institutions in 20 countries. Of those questionnaires not returned, some undoubtedly went to programs which did not conceive of themselves as operating in the field of human settlements; and some schools, we had been warned, do not have the staff, time or postage to deal with such requests, especially if they are in a foreign language. Since we had no funding, we could not give help to such institutions or gather the material directly.

Although there are a large number of programs in Latin America which seem to fit our criteria, returns were limited, among other reasons, because of the language. Therefore, the returns are geographically concentrated in Africa and Asia and represent predominantly programs in which English is the primary language. Table 1 is a list of responding institutions by country, and the dates the programs were established.

The program with the longest history goes back to 1950 and the newest one begins this year. In general programs related to architecture started in the 50s and those calling themselves environmental planning were established in the late 60s. Some of these programs have evolved and changed in response to the needs of their countries.

Many of the programs are short of staff, materials, books, and space. But they are rich in problems to be solved — new towns in Malaysia, squatters in India, intermediate technologies for Africa. Many of the core faculty members have received first rate technical training and unlike some of their contemporaries have returned to their home countries. They often indicate willingness to improve both the educational programs and the local environment.

Table 1
Respondents to questionnaire on training programs for human settlements

Program*	Location	Year started	
Department of Building, School of Architecture, Planning and Surveying, Mara Institute of Technology	Shah Alam, Malaysia	1974	
Department of Town and Regional Planning, School of Architecture, Planning and Surveying, Mara Institute of Technology	Shah Alam, Malaysia	1969	Diploma TRP
		1972	Certificate TRP
		1975	Advanced diploma TRP
Urban Design, School of Architecture, Universidad Autonomia de Puebla	Puebla, Mexico	1973	
Nigerian Institute of Social and Economic Research, University of Ibadan	Ibadan, Nigeria		
Department of Urban and Regional Planning, Ahmadu Bello University	Zaria, Nigeria	1972	session
College of Architecture, University of the Philippines	Quezon City, Philippines	1965	BS Arch.
		1971	B. Land Arch.
		1971	B. Interior Design
		1972	M. Arch.
Institute of Environmental Planning, University of the Philippines	Quezon City, Philippines	1968	
Human Ecology Course and Practical Ecology Course, Department of Biological Sciences, Philippine Women's University	Manila, Philippines	1973	
Environment training program, African Institute for Economic Development	Dakar, Senegal	1972	
Department of Geography, Faculty of Arts, University of Khartoum	Khartoum, Dem. Rep. of Sudan	1964	
Department of Architecture, Feng-Chia College of Engineering and Business	Taichung, Taiwan	1962	
Department of Architecture, Tunghai University	Taichung, Taiwan	1960	
Departments of Urban and Regional Planning, Estate Management and Valuation, and Land Surveying; Ardhi Institute	Dar es Salaam, Tanzania	1972	
Human Settlements Planning and Development, Division of Community and Regional Development, Asian Institute of Technology	Bangkok, Thailand	1973	
Architecture, Urban Design; Faculty of Architecture, Silpakorn University	Bangkok, Thailand	1955	B. Arch.
		1974	M. Arch. in Urban Design
Departments of Human Geography, Physical Geography, and Cartography; Geography School, Universidad de Los Andes	Merida, Venezuela	1963	(To begin in 1976 — the Instituto de Geografía y Conservación de Recursos Naturales) Estudios de Postgrado

* If your program is NOT listed and you would like it to be considered as we continue this study, please let us know and we will send you a questionnaire. Correspondence should be addressed to: Gwen Bell, Page Farm Road, Lincoln, Massachusetts 01773, USA.

Degree or no degree

With worldwide focus on human settlements in 1976 and the acceptance of the value of cultural diversity, the reliance on Western norms is beginning to lessen. It can be overcome if, as John Brine suggests, role expectations can be shaken and programs "which do not inhibit the contact with reality"[3] can be established. A start has been made with the creation of both degree and nondegree programs in the developing countries. These programs need to be augmented and related to each other in order to train enough people with appropriate skills.

The older programs, in our survey, are based on traditional degree programs in architecture, planning and geography. In the ex-Commonwealth nations initial acceptance is dependent on passing O-level examinations after which there are formalized programs based on the British system and often utilizing outside examiners from other ex-Commonwealth nations. Programs based on US patterns are no less structured.

Now, however, programs have begun to develop which relate to specific problem areas and either train at postgraduate or "intermediate technology" levels. These programs are much less structured and more problem-oriented. The Development Academy of the Philippines (founded in the 60s) provided the base of operations for the Philippine National Task Force on Human Settlements, which combined the job of educating existing bureaucrats and developing a rationale for national planning for human settlements. Once the task force had successfully dealt with its problem, it disbanded. The Environment Training Program sponsored by the IDEP, UNEP and SIDA in Dakar, Senegal, has three-month programs in the field of ecology applied

to physical planning of rural and urban areas. The National Environmental Engineering Research Institute, Nagpur, India, offers short training programs relating to water, sewage, refuse, pollution and other environmental problems of settlements.

The advantage of the nondegree programs is that they are problem-oriented rather than related to the traditions that accompany the awarding of a particular degree. But because they are not degree-awarding they generally have somewhat less market value to the individual in pursuit of a career in a profession dominated by people with a given degree (club-members). But there is no way to reorient degrees suddenly and to multiply their numbers to the quantities needed. (A EAROPH report indicated that "the number of qualified planners that can be put out by a properly organized teaching department will vary between 15 to 25."[4]) Problem-oriented training programs are essential. They can begin to provide the quantities of people needed to meet the magnitude of the problem, and, it is hoped, provide the qualitative solutions that are based on a well-integrated program.

Patterns of synthesis

Implicitly, each program reviewed achieves some synthesis with regard to training about human settlements. On analysis of the responding programs, as reflected by their course listings, several different patterns emerged, generally relating to the origins of the program, for instance within departments of architecture versus geography versus engineering.

The five ekistic elements — nature, anthropos, society, shells, and networks — are used to define the different interrelationships (figs. 1-4). A synthesis need not incorporate all aspects of the problem, but puts together several different ones; and the quality of education in no way is equated with the quantity of elements covered.

Ekistic programs: Nine of the programs have tried to integrate at least four of the five elements of human settlements. These appear to be the truly interdisciplinary programs which have gone outside traditional departmental bounds and have brought together a diverse faculty which uses the different concepts in practical application problem-solving exercises in the surrounding region.

Only one of the nine programs, the Ardhi Institute of the Ministry of Lands, Housing and Urban Development of Tanzania, brings in aspects of all five elements (fig. 1). The Ardhi Institute gives three diplomas — in urban and regional planning, estate management and valuation, and land surveying, after a three-year, postsecondary education course.

All nine programs have been established since 1970 and are geared to graduate about 20 planners or urban designers per year. These are the new young professionals for their countries.

It is not surprising that Malaysia has three programs, which together will graduate 60 planners a year. The economy of the country is booming, there are new lands to develop, and planners are in demand both in the public and the private sectors.

The two programs in Thailand complement each other: one is a planning degree at the UN-sponsored Asian Institute of Technology and the other an urban design degree given by a faculty of architecture.

The greatest gaps in the programs are in courses related to anthropos — health, human development, behavior, and psychology.

Environment and society concentrations (fig. 2): There has been considerable overlap in the concern for the natural and the built environment of human settlements. Geographers and civil engineers have traditionally taken into account both systems: flood plains and dam projects; natural topography and transportation networks, and so on. The six programs reflecting this synthesis are all new, although some are offshoots from traditional departments.

Geography departments integrate physical and human geography in their settlement programs. While the subject matter is much the same as that studied by planners, the courses generally concentrate on learning empirical facts and understanding theories rather than applying any of their knowledge to problematic situations. However, in fact, one finds at a later stage that geographers take on many positions in planning offices, carrying out cartographic and research functions.

Similarly, the department of biological sciences of the Philippine Women's University has added a dimension of concern for the ecology of settlements.

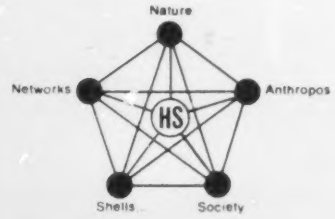
The two institutes in Nagpur and Dakar offer the reverse: problem-solving graphical short-term training programs. The National Environmental Engineering Research Institute at Nagpur gives traditional courses relating networks and nature — such as water pollution control and sewage disposal. The Environment Training Program of the African Institute for Economic Development deals with the particular ecology of arid north Africa, human development, and social institutions in terms of the development of urban and rural settlements.

The built environment (fig. 3, p. 268). There are seven different patterns of integrating the traditions of the building profession within the broader scope of human settlements. At the simplest level, two of the programs (fig. 3a — Chandigarh College of Architecture and the Department of Architecture, Bandung Institute of Technology) have simply related the questions of "shells" to some broader questions. Other programs have brought in other elements in order to do this task.

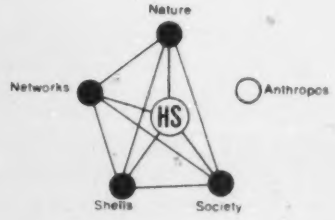
The most common integration is shells within the network systems — buildings with roads and traffic (fig. 3b). These programs emphasize this factor in their titles, for instance, Department of Physical Planning or Department of Building.

A second kind of integration comes from combining more knowledge of the spatial aspects of human

Fig. 1



Aroni Institute, Tanzania



Center for Environmental Planning and Technology, Ahmedabad, India

Department of Urban and Regional Planning, University of Nairobi, Kenya

School of Housing, Building and Planning, Universiti Sains Malaysia, Minden, Malaysia

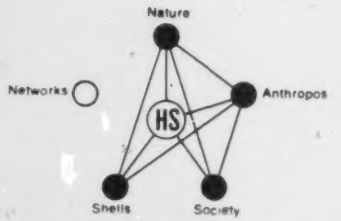
Department of Urban and Regional Planning, Universiti Teknologi Malaysia, Kuala Lumpur, Malaysia

Department of Town and Regional Planning, Mara Institute of Technology, Shah Alam, Malaysia

Department of Urban and Regional Planning, Ahmadu Bello University, Zaria, Nigeria

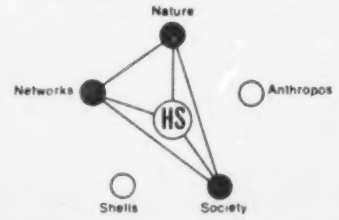
Human Settlements Planning and Development, Asian Institute of Technology, Bangkok, Thailand

Department of City and Regional Planning, University of Tehran, Iran

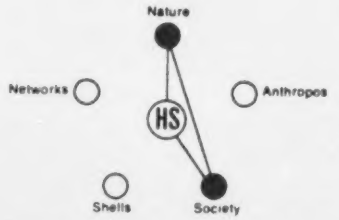


Faculty of Architecture, Silpakorn University, Bangkok, Thailand

Fig. 2

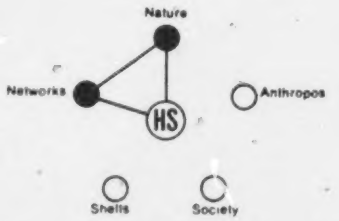


Settlement Geography, Universiti Sains Malaysia, Minden, Malaysia

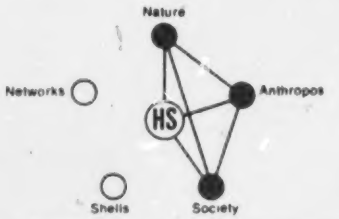


Department of Geography, University of Yaounde, Cameroon

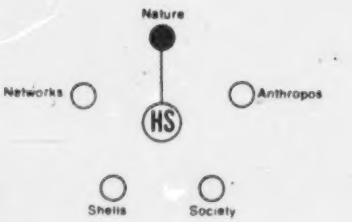
Geography School, Universidad de Los Andes, Mérida, Venezuela



National Environmental Engineering Research Institute, Nagpur, India



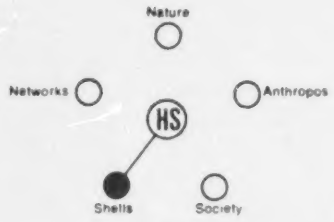
Environment training program, African Institute for Economic Development, Dakar, Senegal



Department of Biological Sciences, Philippine Women's University, Manila, Philippines.

Fig. 3

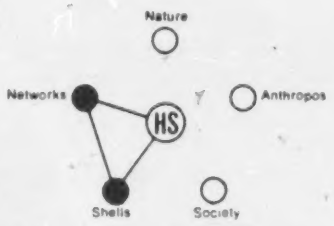
(Fig. 3a)



Chandigarh College of Architecture, India

Department of Architecture, Bandung Institute of Technology, Indonesia

(Fig. 3b)



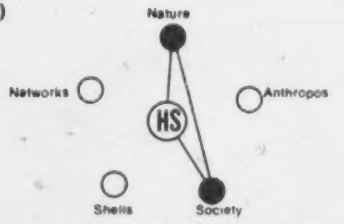
Department of Physical Planning, Bangladesh University of Engineering and Technology, Dacca, Bangladesh

Department of Architecture at the Technical Faculty, Parahyangen Catholic University, Bandung, Indonesia

Department of Building, School of Architecture, Mara Institute of Technology, Shah Alam, Malaysia

Urban Design, School of Architecture, Universidad Autonomia de Puebla, Mexico

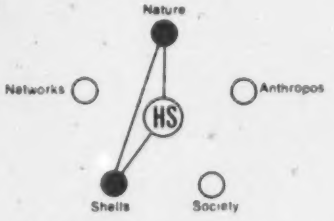
(Fig. 3c)



Department of Architecture, Feng-Chia College of Engineering and Business, Taichung, Taiwan

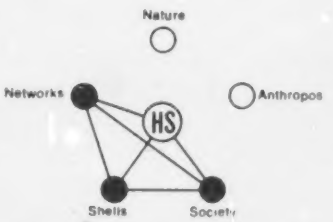
Department of Architecture, Tunghai University, Taichung, Taiwan

(Fig. 3d)



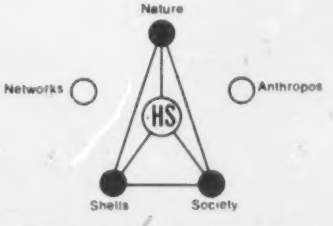
Departments of Environmental Planning and Landscape Architecture, Graduate School of Environmental Studies, Seoul National University, Korea

(Fig. 3e)



Instituto de Planificacion del Desarrollo Urbano, Universidad Católica de Chile, Santiago, Chile

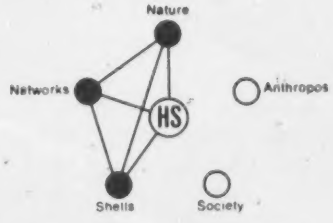
(Fig. 3f)



Faculty of Architecture, Surabaya Institute of Technology, Indonesia

College of Architecture, University of the Philippines, Quezon City, Philippines

(Fig. 3g)



Department of Architecture and Planning, University of Roorkee, India

needs (fig. 3c). The two architecture programs in Taiwan have included courses relating to Edward Hall's ideas of proxemics and other man-environment relationships.

When departments of landscape architecture are coordinated with departments of architecture an integration between shells and nature results, as in the program of environmental planning and landscape architecture at the Seoul National University (fig. 3d).

These programs emphasize only one or two elements and probably cannot be considered broad enough to have responded to the critical needs of human settlements, but have shown some movement toward this.

The programs that relate three elements are beginning to find a new shape that is appropriate to the current problems of human settlements (figs. 3e, 3f, 3g). These are older, established programs and may provide the setting for establishing new curricula with a small number of additional courses and core faculty.

Societal emphasis: Since the social sciences themselves encompass such a variety of traditions, many of these programs can find some synthesis with regard to human settlements within their own structure. The six programs listed in figure 4 are closely related to faculties of either economics, geography, or demography.

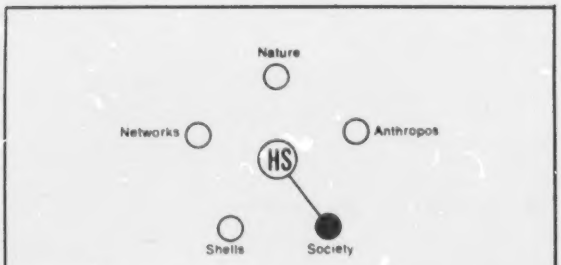
These programs have many courses dealing with urbanization trends, economics, political science, demography, and regional development.

The knowledge base

No single textbook stands out from the listing of primary required reading materials. The lists are as idiosyncratic as the faculty of each institution and their constraints on book purchase and delivery. It is still not uncommon to have the "only authoritative book" on a given subject in the personal office of a professor who guards it with zeal. On the other hand copy machines and book distribution have begun to improve in the last decade.

Each program's basic bibliography is made up of a combination of books and articles from magazines. The commonality of journals used provides one core of an evolving knowledge base. While the literature here is also widely distributed — 39 different journals were cited in the 126 citations of basic readings — a core of 7 can be identified. These include the journals of the American and British planning associations *(The AIP Journal* and *The Planner);* both the journal and the *Papers and Proceedings of the Regional Science Association;* EKISTICS; the *Town Planning Review;* and *Urban Studies.* In addition, programs that have developed particular special areas then generally use materials from the major journal in their area, such as *Land Economics* and *Economic Development and Cultural Change* in land development oriented programs.

Fig. 4



Regional and Urban Planning, Departamento de Planeamiento, Universidad del Nordeste, Resistencia, Argentina

Demographic Institute, Fakultas Ekonomi, Universitas Indonesia, Jakarta, Indonesia

Social Geography Programme, Department of Geography and Earth Sciences, University of Malawi, Zomba, Malawi

Nigerian Institute of Social and Economic Research, University of Ibadan, Nigeria

Institute of Environmental Planning, University of the Philippines, Quezon City, Philippines

Department of Geography, Faculty of Arts, University of Khartoum, Dem. Rep. of Sudan

Table 2 (p. 270) compares the citation of journals in the basic required reading lists of the programs against a study of the ranking of the journals as cited by authors of articles in the *AIP Journal, Town Planning Review, Journal of the Royal Town Planning Institute (The Planner),* EKISTICS, *Urban Affairs Quarterly,* and *Urban Studies,* and of selected bibliographies of the Council of Planning Librarians. The top ten in the citation list were all indicated in some of the reading lists. The different emphasis reflects the priority given to materials directed to areas outside Europe and North America in the reading lists of the programs surveyed.

In addition to "imported" textbooks and journals, each of the programs relies on reports and plans relating to their own locale. The World Bank, the United Nations, and national governments provide the major sources of such reports.

Suggestions

Most of the programs mentioned are providing quality education in areas where settlements are fraught with problems of growth, overcrowding, strained infrastructure, underemployment and poverty. It is important that these programs continue to establish their own syntheses, not necessarily trying to integrate all five elements, but trying to strengthen what they have. If, rather than a hierarchy of regional versus local schools, there were local schools with a variety of strengths, then each region could offer a full range of educational opportunities. Regional associations and publications would keep the schools communicating with each other and, it is hoped, would become well enough established in their own right to make it no longer a necessity to join the traditional Western associations.

Table 2
Fifty most frequently cited journals

In courses	Journal	Number citations[1]
**	J American Institute of Planners	1518
*	American Sociological Review	404
**	EKISTICS	374
**	The Planner (J Royal Town Planning Institute)	320
*	Land Economics	301
**	Town Planning Review	267
**	Papers and Proceedings Regional Science Assoc.	257
*	American J Sociology	255
*	Economic Geography	202
**	J Regional Science	202
*	Annals Assoc. American Geographers	191
	General Systems Yearbook	190
**	Urban Studies	189
	Science	184
	Geographical Review	162
	Annals American Assoc. Political & Soc. Sci.	148
*	American Economic Review	145
	Daedalus	141
*	Regional Studies	140
	Social Forces	137
	J Social Issues	132
*	Public Administration Review	131
	Architectural Forum	123
	Planning	123
*	Scientific American	120
*	Economic Development and Cultural Change	118
	American Political Science Review	106
	Town and Country Planning	101
*	J Political Economy	92
	American City	91
	Public Interest	89
	Environment and Behavior	88
	American J Public Health	86
	Traffic Quarterly	82
	Highway Research Record	78
	Landscape	76
	Operations Research	76
*	Review Economics & Statistics	76
*	Architectural Design	73
	Built Environment	69
*	Quarterly J Economics	69
	J American Institute Architects	68
*	Soviet Geography	63
	New York Times Magazine	63
	J Housing	62
	Society (Transaction)	61
	Business Week	59
	Architectural Review	58
	Urban Land	58

** Cited more than five times and in more than one program.

* Cited less than five times or in only one program.

1. Number of citations to the journal in the *AIP Journal, Town Planning Review, Journal of the Royal Town Planning Institute, EKISTICS, Urban Affairs Quarterly, Urban Studies* and selected bibliographies of the Council of Planning Librarians, 1968-1975.

At present many programs and faculties in human settlements seem bent upon making their own syntheses. While there is the classic debate about the value of reinventing the wheel, it does seem that there are some precedents in the field that might create a common base and allow more time to deal with specific problems of local and regional planning.

The kind of manuals appropriate for such training programs necessarily relate specifically to local problems — and these problems are much different from the problems encountered in Europe or North America, the sites of traditional programs. The course manuals for such subjects as road design, air pollution, and other technical areas are often brought home by the recently graduated planning student, and then applied to the local situation. Teaching materials prepared in the lesser developed countries seldom get transferred to other similar areas which could use them. The course manual on environmental microbiology from Nagpur[5] is appropriate for similar courses in Nigeria or Indonesia. Similarly the course materials developed at the Environment Training Program in Senegal, and the Development Academy of the Philippines should be of use in similar areas.

In areas that are growing and changing so rapidly the most useful ongoing information may be in the form of reports, syllabuses, journals and papers which constantly provide new information. As John Brine has said:

> In the newly developing countries planners must take every initiative to move with future-oriented attitudes into management and necessarily, into communication — where communication implies the catalytic process of spreading ideas and facilitating action throughout the development system.[6]

References

1. Patrick Geddes, *Cities in Evolution* (New York City, New York, Harper & Row, 1971).
2. See for example:

   W. Alonso and F.W. Ledgar, "The education of town and regional planners in developing countries," *Journal of the Town Planning Institute*, vol. 51, no. 9 (1965), p. 364.

   William W. Nash, Jr and I. Serageldin, "Toward realistic training of planners," *Modern Government* (May 1971), p. 29.

   H. Peter Oberlander, "Education for physical planning," *Journal of the Town Planning Institute*, vol. 50, no. 1 (1964).

   Amjad Ali Bahadur Rizvi, "City and regional planning education," EKISTICS, vol. 32, no. 193 (1971), p. 445.

   Jaqueline Tyrwhitt, "Urban planning training in southeast Asia," EKISTICS, vol. 26, no. 157 (1968), p. 483.
3. John Brine, "Educational objectives and options for planners of developing countries," *Journal of the Royal Town Planning Institute*, vol. 58, no. 5 (1972), p. 197.
4. EAROPH report on planning and housing education, *Urban and Rural Thought*, vol. 15, no. 3 (1972), p. 32.
5. *Manual on Environmental Microbiology*, National Environmental Engineering Research Institute, Nagpur, India (1974).
6. John Brine, op. cit. p. 198.

Planning education in Nigeria

Tom A. Gihring

The author is with the Department of Urban and Regional Planning, Ahmadu Bello University, Zaria, Nigeria.

For the first time in Nigeria, the central government, through the Second National Development Plan (1970-74), acknowledged the importance of urban and regional planning in allocating N£ 19 million for physical planning. The Third National Development Plan currently in preparation will contain specific policy statements on a national strategy for urban and regional development, and has already precipitated steps leading to the creation of a new Federal Ministry of Housing and Urban Development.

Recent professional planning conferences have been vibrant with discussion about the past inefficiency of "spaceless" national planning, and the need for integrating national economic planning and physical development planning to achieve geographically more balanced development. The lack of planners in Nigeria was a factor responsible for the low level of performance in the planning sector of the Second National Development Plan. The average spending ratio relating to the plan fell below 50 percent of funds allocated.[1] One estimate placed the number of fully trained professionals engaged in town planning at only 35 for all of Nigeria in 1972, hardly a sufficient task force to carry out an ambitious development program.[2]

Viewing the demand side, three estimates for 1972-73 by Dix, Kulshrestha and Vagale have set the professional manpower demand at roughly 750, 600, and 450 respectively.[3] Kulshrestha's projections, abstracted in table 1, are based on an assumed total number of public planning agencies required at the federal, state and local levels, and an assumed staffing standard for the organizational structure required at each level.

Education programs

Until quite recently the source of Nigerian planners was exclusively overseas schools. The majority of them were first degree architects attending postgraduate diploma courses in Britain and Australia.

The first in-country training of town planners began at the subprofessional level at Ibadan Polytechnic (then the Technical College) in 1961. At that time, only two schools in English-speaking West Africa offered courses in town planning, both of which aimed at the intermediate examination level of the RTPI. Ibadan Polytechnic's town planning section was attached to the Civil Engineering Department until 1968, when Professor Vagale succeeded in building up an independent town planning division within the Polytechnic, as a UN-funded project.

Vagale's aim was to inject a strong dose of indigenous material into the curriculum. The core of the three-year Ordinary Diploma program consists of physical planning and design subjects. The "design stream," mostly studio work, consumes the largest bulk of course hours. Civil engineering and building construction, land survey, traffic, housing, and planning administration form a liberal amount of the remaining "peripheral" subjects required.[4]

It was not until mid-1972 that the outlook for an expansion of planning education substantially brightened. Both Ahmadu Bello University in Zaria, North Central State, and Lagos University had reformed their departments of architecture into Faculties of Environmental Design, thus opening the possibility of broadening their offerings. Professor Vagale meantime had released his final report to the UN recommending the establishment of independent

Table 1
Current demand for town planners in Nigeria

PROFESSIONAL	
Chief planners & planners	60
Associate planners	150
Assistant planners	300
Academic instructors & researchers	90
Total	600
TECHNICAL	
Planning technicians	660
Technical instructors	20
Total	680

town planning departments in the universities located at Lagos, Ibadan and Zaria which would offer full professional degrees. The report advocated planning training and education at three levels:

1. diploma (subprofessional);
2. first degree professional (four-year course);
3. master's degree professional (two-year course).

At the same time, Professor Gerald Dix of Nottingham University completed his report to Ahmadu Bello University, proposing the establishment of a post-graduate course within the Faculty of Environmental Design.

Thus Ahmadu Bello University became the first school in Nigeria, and the second in English-speaking West Africa, to offer a degree-awarding course in urban and regional planning. The two-year program diligently subscribes to the interdisciplinary approach to planning, to the extent that nearly half of the total number of subjects are conducted by staff from allied departments. Courses and workshops both place a strong emphasis on the comprehensiveness of planning and analytical methods, all within the loose framework of the admittedly dubious term "physical planning."

While the Planning Department at ABU is gradually developing its program along a fairly independent course within the faculty, the University of Lagos Faculty of Environmental Design is simultaneously building up a general first degree course which offers a bachelor's degree in "environmental studies." The three-year course in "preprofessional basic training" is intended to prepare design generalists at the "intermediate technology" level for further studies in one of the optional areas of urban design, architecture, urban and regional planning, and building technology. The faculty is now admitting its first class of postgraduate student planners.

A growing consciousness as well as advances in design methodology have posed considerable challenge to physical determinism implicit in traditional planning practice. While the content of planning, as indicated by the prefix "physical," is subject to increasing debate among Nigerian planners, it is not surprising that the most recently organized planning program has made a deliberate departure from the physical design approach.

The University of Ibadan in 1968 authorized the Faculty of Social Sciences to offer a master's degree course in planning science. The initiative to create this course was taken at a time when an active interest in national economic planning was being generated. That the scientific approach was adopted can be explained in part by the fact that among the promoters of the course are two urban geographers, Professor Akin Mabogunje and Dr Ken Barbour.

What could be regarded as the "Ibadan philosophy" is a product of the thinking of Mabogunje and Barbour who believe that geography and economics are the "root" disciplines from which planners must draw their basic theory.[5] Systems theory, decision models, urban growth models, and economic theory make up the bulk of the course material, while options for specialization are offered in development planning, industrial planning and regional planning. The question remains if and how innovative programs such as this will become accepted and incorporated into an integrated national scheme of planning education as now conceived and supported by the Nigerian Institute of Town Planners.

In October 1973 Kaduna Polytechnic in North Central State initiated its first full-time town planning course under the administrative supervision of the Survey Unit. The three-year course offers an Ordinary Technician's Diploma to students who may specialize, after the common first year, in either town planning or land economy. In terms of course content, the Kaduna course is comparable to that at Ibadan Polytechnic though the emphasis is different. The Kaduna course devotes more hours to theory and liberal arts and science subjects, while Ibadan's is considerably more oriented towards techniques of design.

By June of 1974, four academic planning programs were in full operation. By October, six courses were operational as Lagos moved into its postgraduate phase and Ibadan Polytechnic opened a new four-year professional undergraduate course.

A variety of approaches and emphases have helped to move each of these courses in a unique direction. However, it does appear that no other causal factor has been more directly attributable to the shaping of the distinctive qualities of each of the six programs than the individuals who were instrumental in first formulating them (table 2). Ibadan Polytechnic and Lagos University, both design oriented, were undoubtedly influenced by the architect-planners who brought in these programs. ABU and Kaduna Polytechnic offer nearly equivalent amounts of design and methods in their subject material and basically support their courses with a substantial foundation of theory. Both of these syllabuses were influenced by generalist planners. The University of Ibadan's curriculum in planning science is unique among the six programs in that it is the only one influenced substantially by economic/regional geographers who in fact at present manage the course.

Evaluation of programs

The Ibadan Polytechnic diploma course reinforces mainstream concepts of master planning. This orientation is not necessarily inappropriate as it is aligned to the existing, though outmoded, "scheme" provision built into Nigerian planning law. Planning theory, rather than treating questions of the planning purpose, methods of public decision-making and public interest determination, emphasizes design solutions promoted by the earliest planners Ebenezer Howard, Clarence Stein and others. While Ibadan Polytechnic cannot claim leadership in theory and method, it has nevertheless again demonstrated its

Table 2
Comparative content of Nigerian planning courses

	Design & studio	Planning theory	Analytical methods	Engineering	General studies	Law & admin.	Total
Ibadan Poly. (Dip. T.P.)	33	5	2	15	3	2	60
ABU (M.Sc.Pl.)	18	12	16	4	5	4	60
Lagos Univ. (B.E.S)	14	16	0	16	14	0	60
Lagos Univ. (M.C.P.)	11	34	9	0	2	4	60
Ibadan Univ. (M.Sc.Pl.Sch.)	0	34	16	0	10	0	60
Kaduna Poly. (Dip. T.P.)	11	17	8	11	10	3	60
Ibadan Poly. (B.T.P.)	40	6	4	5	4	1	60
Balanced apportionment	10	10	10	10	10	10	60

initiative in course-building by launching the first professional undergraduate four-year course in urban and regional planning.[6] A brief examination of the prospectus does leave one with the impression that the program may amount to little more than an expansion of the subprofessional technical course, devoting insufficient time to research and method of enquiry necessary to cultivate rational judgment and to stimulate innovation.

The Ibadan University course in planning science appears to have rejected the design approach in favor of economic policy planning, to an extent that its graduates in the employ of a typical planning office may find themselves inadequately trained to handle routine problems of physical plan preparation or site layouts.

The Lagos University environmental design course, just entering its postgraduate phase, may be expected to run into difficulties not necessarily because of its strong architecture bias, but rather because of its basic "ingrown" structure. Comprising two among six postgraduate options, the MCP (city) and MRP (regional) degree programs might draw only a small handful of candidates from its own three-year basic "core" course. (Planning is an attractive career field in the Nigerian public service, but is by no means as financially rewarding as architecture.) On the other hand, the planning program does not appear to be prepared to manage students who elect to join from first degree courses outside the faculty, and therefore have not fulfilled the "core degree" requirements.

The planning program at Ahmadu Bello University, currently in its third session, is producing a modest number of generalist planners. The problem with this course is that time limitations never actually permit students to achieve a high level of technical proficiency in any one area of planning. Students are given a broad spectrum of required subjects ranging through housing, transportation, site planning, law and administration, and research methods, to name a few. The first degree geographer, as an example, has scarcely enough time to move beyond the realm of descriptive and explanatory theory into the main body of normative and prescriptive planning theory.

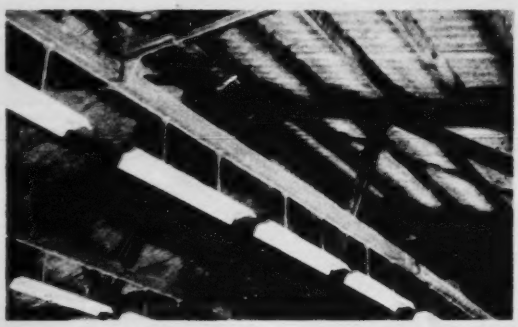
Proposals

What then constitutes the representative content of a balanced course suitable for planning education in Nigeria? A working committee based at the Centre for Environmental Studies (CES), London, has produced a set of general guidelines for planning education. Its proposals reflect innovative forms of planning practice which are gradually becoming institutionalized within the British system of urban governance.[7] Briefly, the CES report identifies at least four areas where further development is needed in planning education: (1) adoption of the problem-solving approach to learning experience; (2) emphasis on planning procedures and analytical techniques, particularly at the higher degree level; (3) involvement with social and economic problems as distinct from traditionally predominant "physico-spatial" aspects; (4) further development of "organizational knowledge" — that is, knowledge of decision systems and organizational structure.

Bearing in mind the predominant views within the planning establishment in Nigeria, these objectives

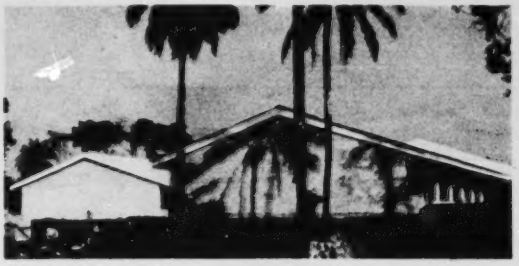
University of Ife, Nigeria

1



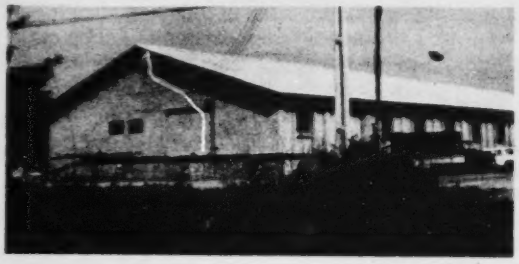
The roof structure of the agricultural engineering laboratory workshop owed its use to Professor Witzel, the first professor of agricultural engineering at Ife. Professor Witzel was one of the high level personnel seconded by the University of Wisconsin on a link with the Ife Faculty of Agriculture to set up the nuclei of each department in the faculty. The material selected had no commercial value until then mainly because of its very heavy weight. Its use cut roofing cost drastically and enabled sufficient funds to be saved for building the annexe to the main laboratory.

2



The building on the right is the main agricultural engineering workshop with a span in excess of 18 meters. The savings from the roof structure (the difference between the costs of the timber construction and the roof trusses in steel) enabled the Department of Agricultural Engineering to put up an extension building on the left.

3



The central stores building is the largest at the University of Ife and was built by direct labor under the leadership of the university director of works and maintenance services. The timber roofing cost ₦18,000 (both the timber structure and the covering) which represents only 25 to 30 percent of the cost as submitted by steelworks contractors in June 1974. Assistance was required not only to discover some cost reducing materials but also their other properties such as strength, treatment, and so on.

4

The roof covering for the Faculty of Pharmacy building was ordered from Australia. Fifty extra sheets were ordered for future replacement of those which age or break.

5

These two special roofing sheets are samples of those imported for the pharmacy building at the University of Ife in 1974. They had been ordered in excess to replace the originals in case of breakages. The designer of this building could have tried to find local substitutes instead of importing these items all the way from Australia.

(Photos by Kunle Ade Wahab.)

are likely to be met with varying degrees of anticipation. The first, on the adoption of the problem-solving approach to learning experience, would undoubtedly generate the most enthusiasm, as the academic courses which emphasize the "practical" application of knowledge are inevitably popular with both students and town planning officials. The second area, relating to analytical techniques, is beginning to develop around a small nucleus of postgraduate programs, especially at the initiative of a growing number of geography-trained planning educators. The third area on increasing involvement with social and economic problems might encounter a residue of suspicion from a small segment of the architect-engineer group of the professional spectrum, although increasing attention is being called to this area by the mainstream of the profession. The fourth area is probably least recognized as an important objective of planning education. Formal integration of the planning function into the local political-administrative machinery is not a clearly established notion in Nigeria, as planning is still perceived almost entirely as an independent line function emanating directly from the state ministries.

This brings us into a discussion of the accepted role of the town planner in Nigeria. The CES working group distinguished between two primary roles of the graduate planner: as technical (to refine the field of choice to decision makers), and as managerial (to create and pursue policy). As the situation now stands, the town planning system in Nigeria tends to regard not only the diploma-holding technician, but also (regrettably) the postgraduate degree holder as mainly a producer of layouts and physical designs. In all likelihood, it will be left to the academic institutions themselves to take the initiative to redefine acceptable roles of the graduate planner. The "balanced" course, then, is one which in fact is innovative and anticipatory of changes in the legal-administrative framework of planning.

Meeting the demand

While the technical and postgraduate levels have been developing with rapid progress in recent years, a noticeable gap in the system still occurs at the middle level where, in Nigeria at the moment, we find only one undergraduate program just getting underway. Perhaps the strongest argument in favor of encouraging the immediate further development of four-year bachelor degree programs can be seen in terms of the manpower situation.

At this moment the planning profession depends almost exclusively on candidates who must in effect enter the planning field via other disciplines. Those most likely to make the switch to planning are degree holders from the saturated, nontechnical fields who have little choice but to "teach or switch." Geographers are currently the prime candidates, while sociologists and political scientists may increasingly find their way into planning schools. There is no supply of planners who have elected planning as their first profession. To offer such an opportunity would greatly increase the number of planning candidates.

Now and for some time yet, until the technical level of planning is raised considerably by the technical equipment and organizational skill of Nigerian society, there will exist a strong argument for preparing large numbers of generalist planners. Highly trained planning specialists function most effectively in large planning team situations which at this time is a rarity in Nigeria.

For the near future the better course of action would be to introduce a new four-year degree course in planning. The course should offer a generalist curriculum aimed at producing a generous supply of associate and assistant planners at the professional level. These graduates will have the capacity to function independently within the many scattered local planning authority offices which are now, in fact, practically inoperative for want of qualified staff.

Prospects for a new legal framework

In Nigeria members of the profession are advocating a major revision of the model planning act. The present planning enabling legislation (Town and Country Planning Act of 1956) is based on a combination of the 1932 and 1947 Town and Country Planning Acts of Britain, and is, by any standard, outmoded. A nationwide revision of the Planning Act appears to be inevitable. What we anticipate is at least two major changes of emphases in a model planning act:

1. *A local emphasis.* We are beginning to realize that in a politically changing Nigeria, successful physical development projects will need the support of a strong local political power base. State governments are not about to risk scarce resources, nor their political futures, by forcing alien or unpopular schemes on the local authorities. We can expect new model legislation to contain clear measures with regard to the local public review process.
2. *Plan comprehensiveness.* The outmoded "scheme" concept embodied in the existing legislation has never really resulted in any design product more refined than ad hoc "layouts" for housing or industrial areas. Furthermore, the great bulk of town planning authorities' efforts have been consumed by government land acquisition matters and the processing of plot allocations and land applications. The next step along the scale — comprehensive planning for towns and regions — has scarcely been attempted, due in part to the shortage of technical and professional staff.

In Nigeria physical planning remains largely outside the local political-administrative machinery. Planning decisions are made exclusively within the policy framework imposed on it by the state ministries, and usually result in allocations of land for various development purposes. The lack of scope for

organizational capacity is aggravated by the fact that whatever decision-making power remains within the planning profession is jealously guarded as a prerogative not generally extended to anyone below those senior planners who have achieved the highest status within this rather rigid form of government hierarchy. Certainly the situation will necessarily undergo major changes before planning is incorporated into the local political-administrative machinery; and furthermore, prevailing notions of power and delegated responsibility held by those in the highest offices will have to be modified before middle level professionals are granted any scope for formulating and pursuing policy in their role as "manager-planners." The academic institutions would do well to adopt the view that such changes are desirable, and will occur. They should furthermore, through the development of a general theory of innovative planning, advance the notion of broader forms of participation in the decision-making process as it relates to town planning.

A challenge to planning education

The planning courses now in operation in Ibadan, Lagos, Kaduna, and Zaria have developed practically independent of one another, and have each adopted unique approaches to course content. Nevertheless, the schools themselves may want to reassess their programs to insure coverage of a range of subject material sufficiently broad to enable the student to develop proficiency in a variety of operations techniques. The graduate planner should have learned individually through his professional training how to manipulate the tools of survey and analysis, how to formulate policy choices, how to prepare and graphically illustrate development plans, and how to convert plans into action programs. The level of sophistication in planning technology and administration has not yet reached the point where interdisciplinary teams of experts can be assembled on a regular basis to frame and execute regional or local development programs. For some time to come, the practicing planner is likely to find himself largely dependent on his own personal skills.

It is expected that the composition of staff in the existing schools of planning will also gradually reflect a wider range of specializations including the social sciences, engineering, administration and design.

In the meantime, plans to establish a second four-year professional course should be initiated. Even at the average intake rate of 40 students per session, both Ibadan Polytechnic and one other institution could only begin to fill the current manpower demand at the first degree professional level within the next ten years.

As far as the organized body of professional planners is concerned, the Nigerian Institute of Town Planners would do well to recognize that each of the six planning education programs has its legitimate place within the increasingly broad spectrum of environmental planning. The subject of planning in all its complexity is much too encompassing to be contained within the confines of a single profession.

Another important objective for planning education in Nigeria is the further development of indigenous planning methods and solutions. An indigenous approach, as opposed to a conventional, Western world approach, would surely result in plans which are more meaningful to those who are affected by them.

Nothing will measure more conclusively the utility of planning education than the extent to which the graduate planner's solutions help to create environments which support the people's own needs and aspirations.

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An educational approach to urban planning and development

S. Domicelj and J.P. Lea

This article is adapted from the Australian government report to Habitat, the United Nations Conference on Human Settlements, Vancouver 1976. The authors are in the Department of Town and Country Planning, The University of Sydney.

It is more than five years since a list of broad goals was established at the start of the Second United Nations Development Decade, which recognized the need for a network of internationally supported major research and training centers to tackle problems associated with accelerated urbanization and a shortage of skilled manpower.[1] These centers were to be founded in all developing regions and sub-regions and it is this broad approach to development problems which has great significance for physical planning education and the future of some of the larger schools in particular. It is logical to assume after all that a regional or even global approach to the major problems of urbanization should also result in a sharing of educational resources and expertise. A certain amount of international cooperation in the training of physical planners from the Third World has existed for many years but has largely been a one-way exercise of sending students to obtain a degree or diploma in Europe or North America. Indeed the transference of Western notions of control over development was facilitated in this way and may have delayed the recognition of essential local planning priorities.

Analyses of the ways in which established planning schools in industrialized countries have developed an interest in the training of students from the Third World depend firmly on the vantage point of the observer. Thus there is an evident distinction between the experience of North American Schools which in turn reflects their historical and cultural links with the developing world and different philosophical approaches to physical planning itself. The same kind of distinctions are even more apparent outside the English-speaking world and complicate comprehensive attempts to examine the changes which have taken place in the training of students from developing countries during the past 25 years (table 1).

Table 1
The changing emphasis in the education of physical planners of the Third World

Time	Industrialized countries	Third World
1950s to early 1960s	The great majority of Third World students are enrolled in formal degree programs in Europe and North America. There is little evidence that courses were adapted to the particular needs of foreign students.	There was little formal training in physical planning. But the first indigenous planning schools were established. Examples were: Indonesia, Ghana and India.
Mid 1960s to early 1970s	New specialized formal degree programs were set up to cater specifically for Third World students. These were normally in existing university departments. In addition a number of short-term training courses were introduced in Europe and North America.	A large number of new indigenous schools were established. The total was estimated at 41 independent schools in Third World countries by 1971.
Mid 1970s	Specialized formal degree programs came under some criticism and give way to short courses for graduates and midcareer training for senior planners from the Third World. The content of formal degree courses begins to include more material on Third World planning issues.	New curriculums in some schools reflect a changing multidisciplinary emphasis in planning training but in other institutions a primarily physical and technical approach is considered more relevant. United Nations initiatives lead to a broad regional examination of training resources and suggest certain forms of specialization.

The 1950s to early 1960s: This period witnessed a considerable influx of students from the Third World to undergo formal physical planning training in the universities and institutes of Europe and North America. There is little evidence that any serious attempts were made to adapt formal planning degree programs to the particular needs of overseas students in the early years,[2] although some specialist courses were available in allied fields.[3] In a number of North American planning schools the foreign intake was one-fifth to one-third of the total student body and many of these were from the Third World. In the developing countries the first indigenous schools were created and some of them received active assistance from well established departments in the West. These arrangements undoubtedly speeded up the provision of physical planning training in a number of developing countries but also served to transfer Western notions about planning to them, and may have overinfluenced the content of their degree programs for a considerable period.

Mid-1960s to early 1970s: It became increasingly obvious after the early 1960s that planning students should receive the greater part of their training in their own countries and that industrialized nations should offer opportunities for specialist training. The result was the establishment of special courses at many universities in the West. In the developing world as many as 41 independent planning schools were in existence during this period[4] and the training of more planners became a priority of many governments. At one stage it looked as if blueprints for starting up a new planning school in a developing country were to become standardized and a suggested list of priorities and typical sequence of events is described by Alonso and Ledgar.[5]

Mid-1970s: In certain countries a traditional and professional emphasis on land-use planning has begun to give way to multidisciplinary approaches to development problems. However, some concepts of economic development and modernization appropriate to developed Western societies are of questionable applicability in much of the Third World.[6] In some industrialized countries student interests in world development problems have led to demands for opportunities to learn more about issues associated with underdevelopment even though few of them are likely to work in the Third World itself.

In the developing countries an increasing autonomy over educational matters has led to logical changes in the emphasis of planning training, as described by Friedmann[7] and Brine,[8] but perhaps the most significant recent development is the move to examine the training of physical planners on a regional basis.[9] This has undoubtedly been influenced by UN agencies in their attempts to establish an international network of regional development centers, and may lead to a mutual sharing of educational expertise and resources.[10]

The development process and planning education: Differing viewpoints about the nature of the development process in the Third World have led to attempts to modernize based on growth models derived from the industrialized countries together with an increasing recognition of the relevance of indigenous systems. This in turn has resulted in a loosening up of the strict demarcation between "industrial" and "developing" countries and created a more complex and rewarding system of relationships.

Planning courses in Third World countries have made a significant contribution to the notion of introducing urban affairs (and issues) at the national government level during the 1970s, and a current acceptance of national trends in accelerated urban development as a positive spur to economic prosperity is taking the place of the view which considered urbanization as only a passive by-product of economic growth.

Incorporated in this national view of development issues is a concern for urban statutory planning and the recognition that policy making and plan implementation need to be closely but flexibly related. The 1972 United Nations Conference on the Human Environment demonstrated that many Third World countries were influential in bringing together environmental and development issues at an international level. A direct consequence was that new possibilities have now arisen for individual countries to consider similar issues at national and subnational scales, and raised the possibility of defining common approaches to urban problems. The upsurge of new and related issues at national and local levels and the increasing awareness of an environmental approach to development matters has resulted in a strengthening of a subnational or regional scale for planning, potentially more meaningful in both conceptual and operational terms.

From an educational standpoint the industrialized countries offer opportunities for specialization, provide an emphasis on technical and professional skills, and possess substantial resources for undertaking research into development in a relatively stable political environment. The developing countries of the Third World by contrast, offer new opportunities to develop policies to cope with rapid rates of growth and changes of a kind which have not been experienced in much of the industrialized world.

Planning education in the world regions: Most international commentaries about the training of physical planners are concerned with the world shortage of trained professionals and the unequal distribution of those who do exist in favor of the developed nations. Considerable care needs to be taken when simple ratios are used to indicate the potential demand for physical planners. In fact two recent publications reveal a range from three planners per 50,000 people in Australia[11] to half of that ratio in Taiwan,[12] but whatever yardstick is used it is evident that there are real shortages of trained professionals in the world's less developed regions.

There are a considerable number of local planning schools in southeast Asia[13] and the Pacific but their graduates are unlikely to keep pace with growing demands arising from accelerated urbanization and the growth of the population.

At least three possibilities exist for increasing the supply of trained planners and there is some value in examining the options (which are not mutually exclusive) in more detail.

● *To send more students away to relatively advanced countries where spare training capacity may exist:* Moves which have separated planning students from their cultural and geographic backgrounds have not always met educational objectives and are rightly seen as a specialist form of training for graduates. It is likely that considerable potential will exist to increase the mid-career skills of professionals in this way but this will not have much effect in reducing the shortage of planners in the developing world. This option is therefore a qualitative rather than a quantitative solution.

● *A rationalization of the operation of existing training centers:* The idea of a hierarchy of local, regional, and world centers for training physical planners is not new but some of the practical implications have received very little attention. A recent report by the Eastern Region Organization for Planning and Housing[14] has recommended a number of organizational developments which might assist several planning schools in the ESCAP region to widen their existing sphere of operations. The locations of the new "Regional Centers" for formal planning training are listed as: Tehran, New Delhi, Manila, Bangkok, Sydney, Hong Kong and Seoul; and Tehran, New Delhi, Singapore, Sydney and Nagoya for short advanced training courses. The report recognizes that some of the smaller countries in the region may not wish to establish their own schools and suggests that the regional centers listed above would be able to cater for the needs of their own subregions. These sentiments are laudable and probably recognize the realities of common development problems in much of southeast Asia but it is unlikely that voluntary demarcation of responsibilities will take place. The main issues are after all the level and nature of skills offered by the various schools and the extent of their interest in the development problems of neighboring states. The geographical distribution of regional centers appears to have taken precedence over the recognition that a hierarchy of planning skills can also be defined which might in fact be more important in developing the region's training resources than the location of the centers themselves. It is clear, for example, that certain skills are more important than others to planners working in relatively underdeveloped countries at the transitional stage of economic development, when institution building and the exploitation of natural resources are at a premium. Several planning schools in the southeast Asian region might therefore be encouraged to capitalize upon existing skills and interests and gradually complement the activities of neighboring institutions. Possible developments of this kind would not detract from the essential basic training needs of each country but might lead to a more efficient use of scarce teaching resources.

● *To widen the terms of reference of professional planning education to allow a larger training responsibility by allied disciplines:* The planning profession has long recognized the fact that many other allied disciplines are involved in the planning process and contribute essential inputs to existing degree programs. We have seen that few of the distinctions between the physical, social and economic branches of planning are regarded as useful or relevant in much of the developing world[15] where the process of development is considered to be indivisible. It is thus appropriate here to question whether a more meaningful vehicle could be created for the training of planners of developing countries than the physical planning schools as they are traditionally constituted. This is an issue which is common to the whole field of planning education and recognizes the existence of a variety of skills and has led to demands to increase the range of subjects available to planning students. Changes in course structure should be possible for postgraduate courses in countries like Australia, New Zealand and Japan to offer more relevant opportunities for students from Third World countries in southeast Asia than has hitherto been the case. There are, of course, problems in attracting staff with the necessary expertise to set up optional courses of the kind which would prove most useful to students from the Third World, but some of the possibilities, such as staff exchanges between departments, have barely been attempted. It is possible that graduate schools of planning (in the broad sense of the term) will evolve from some present departments and will provide training for those who will ultimately find employment in a variety of occupations connected with the development process. Such ideas have been promoted by the Athens Center of Ekistics for some time and deserve serious investigation by all planning schools, and particularly those which are already fulfilling an international role in their educational and research programs.

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Education for planners of human settlements

A retrospective view of the Graduate School of Ekistics

Demetrius S. Iatridis

Dr Iatridis, professor of social planning, Boston College was director of the Graduate School of Ekistics (1959-1966), vice president of the Athens-Center of Ekistics and vice president of Doxiadis Associates.

The activities of the Graduate School of Ekistics (GSE) begun modestly in the late 1950s, reached their peak in the mid-1960s, and completed their experimental cycle in the early 1970s. Today emerging perspectives regarding action for better human settlements make a retrospective view of the GSE particularly timely.

In the 1950s and 1960s the term "human settlements" — let alone its conceptual territory and formidable methodological challenges — was little known, understood or accepted. Yet even before this time Constantinos Doxiadis not only advocated and practiced wholistic planning for human settlements; he was already examining realistic options to educate and train a new generation of planners for human settlements.

I vividly recall 16 years ago, in 1958, an all-night discussion in Washington, DC, when, after many years of separation, Doxiadis and I met again. Until the early morning hours, he expounded his concerns about human settlements — the shortages and limitations of the 1950s planning generation, and the need for development oriented planning. He felt a "responsibility to himself and the planning profession" to invest energy, time and material resources in experimental innovations for more powerful educational systems. He outlined his parameters for an educational framework as:

- New and innovative ideas — beyond what already existed;
- Bold experimentation in flexible, task-oriented educational structures committed to change rather than the status quo;
- Private rather than public sponsorship, auspices and funds;
- Early development of a unique teaching staff drawn from different faculties, countries, and ideologies, which would be both able and willing to learn and engage in academic and real-life problem-solving situations; and
- Implantation of the experiment in mutually interlocking, multifunctional structures of education, training research and international activities to permit study of generic (not country-specific) structures, functions and development processes of human settlements.

This presented such a unique challenge that I agreed to join C.A. Doxiadis in Athens to participate in what turned out to be a most exciting and rewarding experiment.

Challenges, dilemmas, strategies

At the outset three interrelated sets of major educational challenges confronted GSE's curriculum planning: knowledge conceptualizations, specialization "tracks," and instructional models.

Knowledge conceptualizations: It became immediately apparent that a broad synthesis of many disciplines and subjects was necessary to generate the emergence of more effective planning education for human settlements. Previously efforts had been based mainly on planning skills and knowledge in architecture and engineering, and had just begun to include limited, eclectic knowledge regarding urban society's structure and processes. This knowledge was designed primarily to broaden the student's appreciation of land-use patterns and organization. However at GSE we felt a more efficient planning education system necessitated new curriculum strategies based on vital societal goals and concerns rather than being limited to only those patterns which interact regularly and systematically with the physical environment (or the objects to be planned).

Core knowledge areas: The GSE chose a number of core knowledge areas that represented a combination suggested by critical analyses of the ekistic conceptual scope and by the identification of the most strategic problems in the development of human settlements. This provided the following broad knowledge clusters for possible inclusion:

- *Ekistic elements:* Nature, Man, Society, Shells, Networks; and their subdivisions;

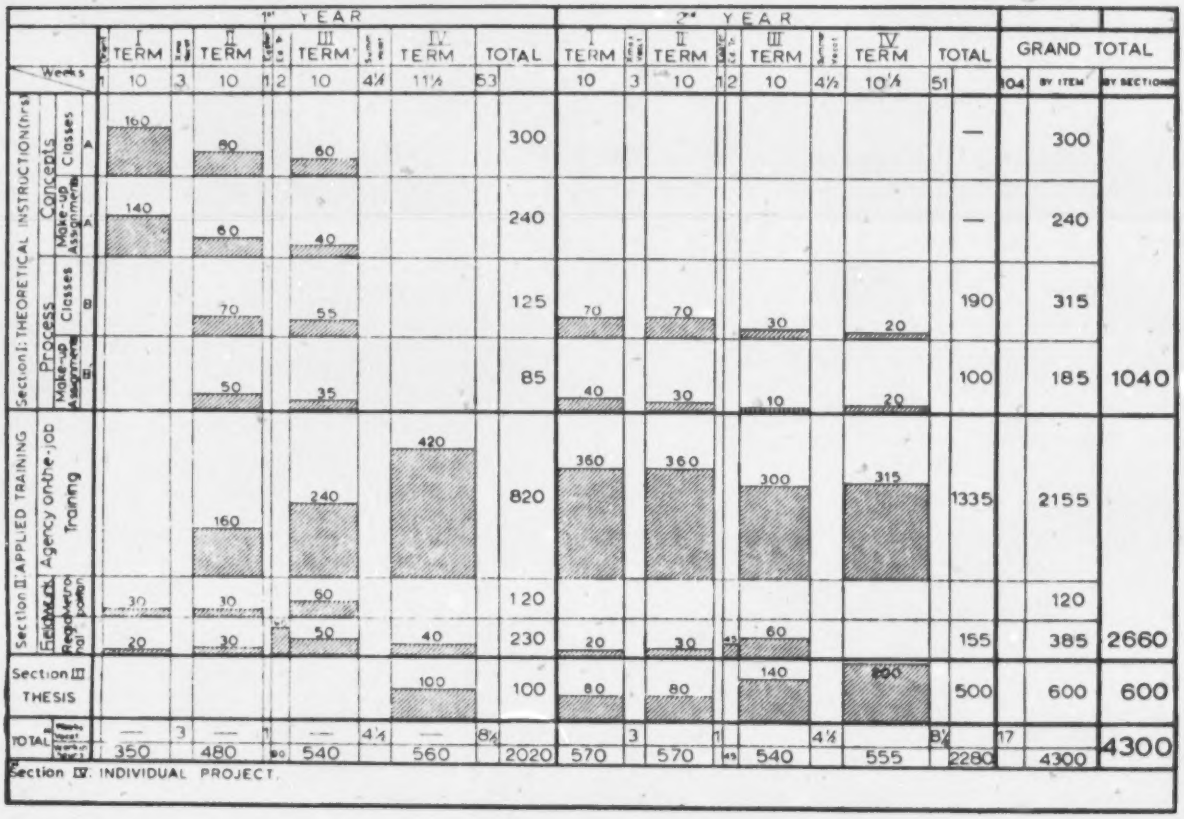

Fig. 1: Curriculum analysis, 1964-65

- *Ekistic community scale*: 15 community scale units from man, room, dwelling to megalopolis, ecumenopolis; and further divided in rural, urban and regional settlements;
- *Disciplines:* architecture, economics, engineering, geography, social sciences, and planning.

We faced questions in putting this program into effect. Are all core areas equally necessary? And, it realistic to expect that Master degree candidates would (or should) master all of them? We determined that it is not the accumulation of knowledge as such that is the issue, but rather how such diverse knowledge and skills can be brought into a meaningful development framework in a distinctly human settlement perspective. Our task, then, concentrated on the identification of the most strategic development problems of the foreseeable future, not narrowly on the relationship and implications of the knowledge considered for inclusion to the object to be planned, as for example land-use or housing. We restricted our attention to the concepts and core knowledge areas directly relevant to their solution.

The GSE's core knowledge areas were organized into two interrelated groups: discipline-oriented courses; and courses focusing on the ekistic process. Students with little or no knowledge in one core area — architects who never had a course in economics; economists who had no engineering; sociologists who had no architecture — made up subject matter deficiencies on an individual, faculty-supervised basis. Classwork focused on strategic ways to systematically relate the core areas to development and human settlement perspectives.

Methodologies — Generic skills and tools: Similar challenges of selection and synthesis confronted GSE regarding the inclusion of methodologies and planning tools in its curriculum. The ekistic planning process aims at a synthesis and at synergic, wholistic modes of development. It, therefore, has a unique prescriptive form that permits discrimination between better and worse solutions to problems of human settlements — and one that facilitates the selection of the most optimizing alternative option to development. We experimented with methodologies and tools (system analysis and operations research) which enhanced prescriptive planning tasks.

Substantive development issues: Issues challenging development transcend traditional knowledge clusters, methodologies and tools, providing problem-oriented linkages that bridge diverse disciplines and professions. GSE considered several issues of the foreseeable future and restricted

attention to concerns relevant to their implications. Again the selection of key development problems supplied the criteria for eliminating traditional concerns and adding new ones. At different stages of the experiment we considered:

- Growth versus nongrowth and implications for quality of life;
- Distributive and redistributive policies;
- Equality of access to facilities and services for all population groups.
- Short-long-range planning conflicts.
- Macro-micro level complementarity.
- Human settlements and national development policies.

Specialization: One of the most challenging dilemmas was the introduction of specializations in ekistics. We questioned whether specializations would undermine the "generalist" nature of ekistics and its commitment to wholistic development frameworks. On the other hand, we realized specialization permits more realistic curriculum strategies and individualized choices by students to meet their educational needs. We considered specialization focused on one ekistic element. Alternatively we explored specialization by function (transportation, housing, communications), and by ekistic community scale units. There was, of course, a de-facto specialization by discipline since GSE students were already accomplished specialists in one profession. They joined GSE for a wholistic planning education built on their specialty.

Assuming that there must be "tracks" of some kind due to the broad scope of ekistics or because of students and market mechanisms, should an attempt be made to build the GSE Master's level curriculum on a common core only? or a common core plus special "tracks?" The GSE decided on a core ekistic curriculum, non-country-specific, non-culture-specific, non-socioeconomic-development-specific, non-ideology-specific. Its strategy focused on generic structure-and-process-knowledge-and-skills in the study of human settlements. In effect, legislative, regulatory, and technical standards and other special, nongeneric conditions (all of which can claim a major part of a country-specific curriculum) did not require a formal place in GSE's educational structure. Emphasis on generic knowledge and skills, we assumed, could be constructive followed by professional experience in practice, leading to specialization by settings (national, cultural, geographic, ideological), by functions or methods (research, design, administration).

Instructional models: Classroom didactic methods (lectures, seminars) and problem-solving techniques (gaming techniques, studio-workshops, case-records) presented no special experimental challenge. But effective models for combining course work with field experience did. We debated whether real-life work projects should form an integral part of the GSE's teaching responsibility, and what forms and combinations were most appropriate. We decided on GSE-supervised field work in planning organizations, combining instruction with on-the-job-training through production of actual services. GSE also experimented with "apprenticeship" type work in real-life ekistic projects (approved but not GSE supervised) which emphasized production (not instruction) — a most effective learning method as it turned out.

The GSE's applied-training constituted one of its two major curriculum components. It was similar to the "apprenticeship-with-the-master" earlier models in architecture, the building trades, the arts, the legal profession, elementary and secondary teachers education, as well as the "hospital training" model in medicine. Two interrelated assumptions led to this model:

- The notion that ekistic skills are best learned through actual production work in real-life situations;
- The conviction that theory and practice, far from conflicting are complementary and can be housed simultaneously in an educational structure.

Being affiliated with Doxiadis Associates, which has projects in various parts of the world, gave GSE the option to place its students in ekistic teams working throughout the world. The student rotated to different teams working in different geographic areas and different types of projects so that work experience in different countries, cultures, development tasks, scales and administrative settings strengthened the generic component of ekistic education.

For educational needs that the apprenticeship model could not adequately meet, another form of applied training was added. GSE organized two-week long class field trips to specific human settlements for actual on-the-spot study. Before the trip systematic collection and analysis of data was undertaken to identify specific development problems. On the field trip, work activities included interviews with officials, civic organizations, community members and leaders. Post-field follow-up included the study of alternative growth patterns and the formulation of development strategies.

During the 1959-1966 experimental phase of GSE, half the curriculum and its resources were devoted exclusively to applied training; and half to core knowledge areas in classroom instruction. During the 1967-1972 experimental phase the program shifted from education to training — and its strategy focused on the "apprenticeships-with-the-master" in research or ekistic production work.

References

For further information on typical Western-world planning curricula of the 1950s, see Harvey S. Perloff (1957), *Education for Planning* (Baltimore, University of Chicago Press), pp. 40-43.

Technical manpower for housing, building and planning

Balwant Singh Saini

The author, EKISTICS' correspondent in Australia, drew on his experiences as the head of the architecture program at the University of Queensland in Brisbane and during his consultancy in Papua New Guinea for the preparation of this article.

In a developing country, which urgently requires skilled men and women who can best assist its growth in all directions, education could play a number of key roles. Of these, the two fundamental roles are:

- Provision of skilled manpower for the developing country;
- Generation of a mental climate favorable to growth and change.

A few years ago we were concerned with setting up courses in building at Papua New Guinea University of Technology at Lae in New Guinea. After a thorough appraisal of the local building industry, we came to the conclusion that what we really needed were teachers who were down-to-earth practical men and who were able to transmit this attitude to their students.

Concept-type teaching, which in more developed countries produces a technologist who depends heavily on the tradesman's practical training for execution, was unlikely to be effective in New Guinea. After qualification, the graduate in building may have to actually pick up tools to show his operatives how to do things properly, or how to drive a crane or a machine, and how to attend to mechanical faults. Such a training had to be part and parcel of the whole curriculum and the university needed teachers who could provide such a training. It is not only a matter of skilled manpower, but also of educating the people so that they would not merely passively tolerate the activities of the technically trained, but would encourage and demand such activities.

Teachers who are responsible for training technical manpower, irrespective of whether it is associated with building, housing or planning, must be aware that they should train people who are not only proficient in their professional and technical knowledge to do a job in the field, but also develop a flexible mental outlook which makes it possible for them to adapt themselves readily to changing situations. They must be aware of the part the graduate will play in the total social and economic development of his country. In a developing economy this awareness assumes extreme importance; it imposes the responsibility on the professionals not only to think in terms of immediate solutions but also to give full consideration to repercussions and ramifications which may result from their decisions and actions.

Projects for development invariably involve investment of considerable capital and, owing to their size and complexity, there is an increased stress on a multidisciplinary approach in which it is necessary to pay simultaneous attention to problems in such areas as public health, planning, architecture and engineering, economics and finance, cultural and social traditions, governmental and behavioral sciences.

Team projects

The team effort which is necessary for the execution of the developmental programs in the developing regions, though desirable, is often fraught with difficulties and it is not so easy to achieve in practice. Most disciplines have developed in water-tight compartments, and have acquired separate techniques, methods and terminology. Even their relative importance in the plans for development is vague and undefined. The situation particularly applies to an architect who, having been reared in a climate which trains him to think in terms of individualistic creation, tends to encounter considerable difficulties as a member of a team. In a developing country, he is forced to operate in a setting where his contribution is considerably enlarged to include groups of buildings, housing estates, towns and the region, a contribution whose repercussions on other disciplines becomes more apparent and where even the smallest error can become quite magnified.

1

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Figs. 1 and 2. House building in New Guinea (Photos from Papua New Guinea Government Information and Extension Services)

Against this background where development programs are indeed complex as well as comprehensive some method of approach needs to be devised which will enable teams to operate successfully.

Most problems of physical development in developing regions, regardless of size and scope, generally fall into three stages, each of which could well be organized separately.

The first consists of analyzing and determining the needs to be satisfied. Here human demands are recognized and their social, economical and technical repercussions are evaluated. Past experiences in other developing areas are studied and related solutions are compared.

The second stage involves synthesizing the analyses into a clearly defined workable program. It is a stage which deals with design and description through plans, tables and charts of formulated solutions which satisfy the varied requirements determined by the first.

The third and last stage is that of translation and realization of these ideas into practical solutions. In all these stages of analysis, synthesis and implementation, many specialists work together but the responsibility of each often varies from stage to stage.

In order to clarify the issue involved, take the case of housing — an obvious corollary of the development program. If it has to meet the needs of changing spatial distribution of population, it should be guided and related to siting of economic activity, improvement of transport facilities and

Fig. 3. A lesson in how to operate a simple machine to make cheap bricks on a building site (Photo from Papua New Guinea Government Information and Extension Services)

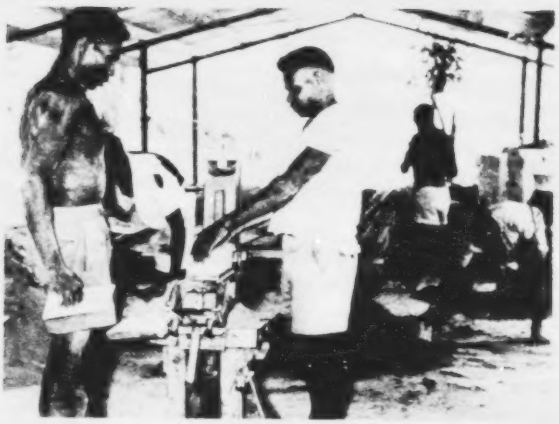

Fig. 4. Teachers must be aware of the part the graduate will play in the total social and economic development of his country. (Photo from Papua New Guinea Government Information and Extension Services)

creation of neighborhood units. Such a program requires a thorough study of interdependence of settlements and their surrounding countryside as well as effects produced by interplay of economics, social and urban forces. All these aspects concern a number of specialists.

During the first stage of analysis all experts, demographers, economists, sociologists and others play important roles. They study each aspect of the problem from all angles, and at the same time through mutual discussions and exchange of views check and control the multiple repercussions of each suggested solution.

The second stage, that of synthesis, is handled by an architect or planner, or a smaller team of professionals who are able to coordinate the findings into a workable program of action. Starting from a vast number of seemingly incompatible prerequisites they synthesize a common solution which may satisfy many. Pitfalls are only too obvious. Apart from qualities of leadership, people charged with a responsibility need to possess sound understanding of the nature, scope and attitudes of the various disciplines involved. They are not expected to become experts in all the fields but they must learn to understand the terminology and language of others, so that they are able to understand and communicate with each other.

During the third stage the initiative belongs to the administering or developmental authorities who apply these findings to solve actual problems in the field. If a framework for such organization does not exist, then machinery needs to be set up to create one. Members from earlier stages do not have to be completely estranged from this work. In fact, they would need to follow the progress of the work, examine and check matters of detailed execution and later criticize and perhaps evaluate the efficiency and soundness of the initial analysis and suggested solution based upon it.

In this overall picture, the architect or planner is invariably made to act as a mediator between the analytical team and the people concerned with implementation of the program. In most cases the task needs to be completed in a very short time. This element of urgency is very often ignored by experts from the first stage who often produce information which cannot be translated directly into practical solutions.

Within the developmental programs, execution of which relies on the joint effort of multidisciplinary teams, the degree to which the architect or planner could assert his influence at both the policy level as well as at the point of execution will largely depend upon understanding of the problems, an understanding which would enable him to see his role in a more sharply defined form.

There are many specific levels at which an architect or planner can make a contribution. Some of these include analytical work — embracing surveys and analysis, theoretical, empirical and applied research, and preparation of plans to obtain the optimum socioeconomic use of resources. Then there are problems of land development and land usage, preinvestment research, and physical, management and financial planning. All this could then lead to the important task of design synthesis and implementation of projects. In fact, it could include any work which involves the full range of environmental design from layout of new towns, through civic design, landscape design and architecture of individual buildings.

In my view, all this talk about interdisciplinary work and awareness of other disciplines does not mean we should train teachers who know a little about everything, but have no deep knowledge of anything particular. I firmly believe that a broad understanding of all the issues involved must be strongly backed by specialization in one or two areas of study. This kind of discipline is the only way to ensure high quality of the end product.

Research and graduate programs

The basic aim of masters programs is to prepare a student to be able to succeed in a self-imposed task and an independent line of study.

In a sense, it is probably true that there is no such thing as basic research in architecture and planning. They are not subjects like physics, chemistry, history and economics. They essentially fall into the category of practice of an art like medicine, law or engineering. I agree with Llewellyn Davies when he says that disciplines like architecture and planning are essentially a synthesis of a number of other subjects rather than something in their own right. It is not my intention to discuss the merits or demerits of basic research.

One of the most important requirements of architectural and planning research in developing countries is that the work must be useful. Before starting any work, I normally ask my students some questions, answers to which reveal a great deal of useful information about their attitudes.

- What are the reasons that warrant the expenditure of the time and money on this problem? (Graduating is not a good enough réason).
- Why is it important?
- What findings are expected from the study and of what values, theoretical and practical, will they be?
- To whom will they be valuable?
- Will the results of the research be a preliminary phase of the solution of a wider problem?
- Will the research open up other fields of study?
- Will the findings help in solving other problems?

The literature available on problems of tropical building, particularly that written from the point of view of the architect and planner, is meager. Apart from reports of a rather journalistic nature, which can be gleaned from newspapers and magazines.

the bulk of the information is obtainable from research and other publications related to a fairly wide range of disciplines and personal observations and records which can be made during travel.

Local knowledge

In addition to visual impressions, visits to particular regions help make a broad assessment of the development potential and the building and planning problems which exist there.

From my experience in central Australia and the Pacific Islands, many of which are very remote from urban centers, I have found that it is possible to have informal discussions with the local people and develop a form of genuine involvement with them. You begin to see problems from their point of view. Transport is often uncertain and, invariably, you are forced to stop in places far longer than seems necessary. But this is often a blessing in disguise as a "forced" stay enables one to participate in local activities and assist and advise on matters relating to local building all of which considerably helps to win the confidence of the local people. During a year's stay in New Guinea some years ago, I must have designed well over a dozen different public buildings, often on notepaper, which the local people built with their own efforts. They were no great works of architecture, but a need for such a service obviously existed. In fact, after my departure, the administration of the territory appointed a special architect/builder whose main job was to go around the rural centers and do this very kind of work.

From the research worker's point of view, we have found winning the confidence of the local people is very important as it helps to develop an informal association which then replaces the formal interview techniques normally employed by research workers; an association which often gives a greater insight into the local problems.

Education: working paper

World Bank and the International Development Association

This article is abstracted from the Sector Working Paper on Education, World Bank, December 1974.

Many developing countries are concerned that the relatively high economic growth rates recorded during the last decade have brought little benefits to the poorest strata of society. The growing realization that equitable distribution of income is not an automatic corollary of growth has helped turn attention to development strategies which are directed to the sharing of the benefits of growth as well as to growth itself.

Central to this new approach is the widespread inability of the modern sector of developing economies to make full use of the resources available to it — above all, the human resources. A number of countries, therefore, are considering a strategy based on a different deployment of scarce capital throughout the economy, and a fuller use of available human resources.

Fuller and more productive employment could also mean a more equitable distribution of income to the extent that the main beneficiaries — the unemployed and underemployed — are usually found among the less privileged strata of society. As the overwhelming majority of the very poor are engaged in subsistence farming, a poverty-oriented development strategy assumes that an important proportion of the new productivity will be stimulated in rural areas. Such a change in income patterns would increase the demand for such goods as basic foodstuffs, clothing and low-cost housing — which are usually produced locally (with low import content) by labor-intensive techniques.

A broadening of development objectives also implies that significant changes are needed in educational policies and practices. If education is to contribute to the development of the rural and traditional sectors of the economy, it will have to adapt itself to the needs of these sectors.

An important implication of this expanded development strategy is that education will be an economic as well as a social necessity. Education and training systems will need to be designed to enable the masses that have been unaffected by the growth of the modern sector to participate in the development process as more productive workers — by being able to play their roles effectively as citizens, family members, leaders and members of groups involved in cooperative community action, and in many other ways. This ultimately means that all parts of the population must receive education and training of some kind as soon as resources permit and to the extent that the course of development requires. The benefits of mass education will, of course, be greater when other conditions of development are present. Emphasis on mass education, particularly in rural areas, will first require a better distribution of educational opportunities between geographical areas, between urban and rural regions, between social groups, and between the sexes.

Instances of disproportionate distribution are common. In Kenya, the relative primary school enrollment varies by as much as a factor of nine between provinces. In Colombia, the number of students who successfully complete their primary school education is, relatively, ten times larger in urban schools than in rural schools, mainly because few of the latter provide complete courses. Despite improvements in female enrollments during the 1960s, only 38 percent of the students in primary schools and 28 percent of those in secondary schools are girls in the poorest countries. The new emphasis must also take account of diverse learning clienteles and, consequently, of alternative delivery systems. Education cannot be restricted to school-age youths. Other target groups such as adults, and especially women, must be included. Given the diversity of target groups and educational tasks, it would be advisable to make effective use of non-formal and informal education, in addition to the formal school system.

It is evident that the need to respond to poverty-oriented development strategies introduces important new dimensions in education policy.

Major issues facing education systems

An analysis of the issues facing the less developed countries can be made within a broad perspective, taking into consideration the major objectives of education policies and the critical factors determining the development and functioning of education systems. In this framework, the focal points of discussion will be: (1) formation of skills; (2) participation; (3) equity; (4) efficiency; and (5) planning and management.

Table 1
School enrollment ratios

Per capita[1] GNP	Number of countries	Total population in 1970 (Millions)	Enrollment ratios[2] First level 1960	1965	1970	Second level 1960	1965	1970	Third level 1960	1965	1970
I — Up to $120 (excluding India, Indonesia, Pakistan, Bangladesh)	25	168	34	39	43 (31)	4	5	5	0.3	0.3	0.4
India, Indonesia, Pakistan, Bangladesh	4	802	43	56	71 (63)	9	11	18	1.7	2.6	4.3
II — $121-250	23	287	67	79	83 (68)	9	14	19	2.1	3.0	5.6
III — $251-750	38	433	73	83	97 (77)	11	17	25	1.9	3.3	5.3
IV — $751-1,500	9	112	90	93	97 (80)	33	44	49	6.2	8.4	10.5
V — Over $1,500	24	623	100	100	100	58	65	83	17.0	23.7	30.2

1. Countries in each group are as follows:
I-Afghanistan, Bangladesh, Botswana, Burma, Burundi, Chad, Dahomey, Ethiopia, The Gambia, Guinea, Haiti, India, Indonesia, Lesotho, Malawi, Mali, Nepal, Niger, Nigeria, Pakistan, Rwanda, Somalia, Sri Lanka, Sudan, Tanzania, Upper Volta, Yemen Arab Republic, People's Democratic Republic of Yemen, Zaire.
II-Bolivia, Central African Republic, Cameroon, Equatorial Guinea, Egypt, Ghana, Kenya, Khmer Republic, Republic of Korea, Liberia, Malagasy, Mauritania, Mauritius, Morocco, Philippines, Senegal, Sierra Leone, Swaziland, Thailand, Togo, Tunisia, Uganda, Republic of Vietnam.
III-Algeria, Bahrain, Brazil, Republic of China, People's Republic of Congo, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Fiji, Gabon, Guatemala, Guyana, Honduras, Iran, Iraq, Ivory Coast, Jamaica, Jordan, Lebanon, Malaysia, Mexico, Nicaragua, Oman, Panama, Papua New Guinea, Paraguay, Peru, Portugal, Romania, Saudi Arabia, Syria, Turkey, Uruguay, Yugoslavia, Zambia.
IV-Argentina, Chile, Cyprus, Greece, Singapore, South Africa, Spain, Trinidad and Tobago, Venezuela.
V-Australia, Austria, Belgium, Canada, Denmark, Finland, France, Federal Republic of Germany, Iceland, Israel, Italy, Japan, Kuwait, Libya, Luxembourg, Netherlands, New Zealand, Norway, Qatar, Sweden, United Arab Emirates, United Kingdom, United States.

2. The enrollment ratios have been obtained by dividing the total enrollment at each level with the appropriate age group. These "gross" enrollment ratios are inflated by over-age students. For 1970, it has been possible to exclude the over-age students and estimate "net" enrollment ratios at the first level. The net ratios are indicated in parentheses and show that the over-age students form 10 to 20 percent of the total student body at the first level.

In attempting to discuss education policies, account should be taken of the variety of conditions observed in different developing societies, including countries with yearly per capita incomes ranging from $70 to $1,500, with populations ranging from less than 1 million to 500 million, and with literacy rates varying from 5 percent to over 90 percent. These countries also differ in social stratification, cultural and political traditions, and physical resources. As a basis for the discussion, some characteristic data and trends are shown and analyzed in table 1, which relates enrollment ratios to levels of per capita Gross National Product (GNP).

There are important conclusions to be drawn from table 1. Despite the enrollment increases at all levels of education during the 1960s in developing countries, the gap between the poorest and the richest countries has increased at the secondary and tertiary levels. Twenty-five of the poorest countries have increased their enrollments at those levels by 1.0 and 0.1 percentage points, respectively,

Fig. 1: Despite the enrollment increases at all levels of education during the 1960s in developing countries, the gap between the poorest and the richest countries has increased at the secondary and tertiary levels. (Photo from Manila, by G. Bell)

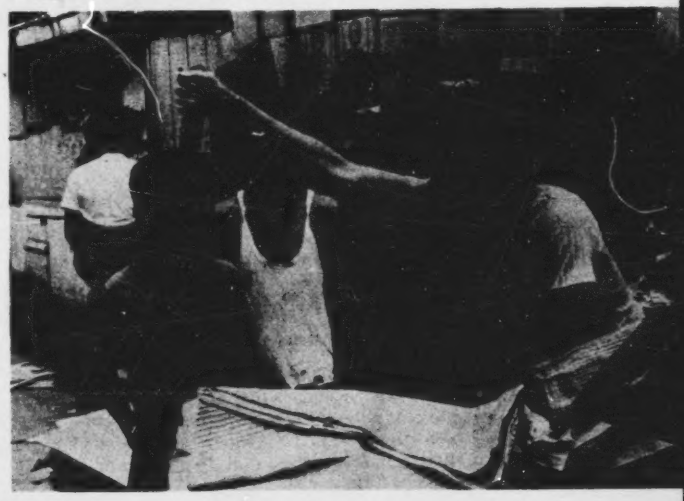

Table 2
Public expenditure in education per student[1]
(US dollars, current prices)

Countries grouped by per capita GNP	1960	1965	1970	Net change
I				
Up to $120	16	21	18	+ 13%
II				
$121-250	33	40	49	+ 49%
III				
$251-750	43	58	57	+ 33%
IV				
$751-1,500	114	165	179	+ 57%
V				
Over $1,500	338	504	749	+ 121%
Group V amount as a multiple of Group I	21	24	42	

Fig. 2: Meeting the minimum learning needs of the uneducated masses to ensure that they can both contribute to and benefit from economic and social development is a major task for the poorest countries. A schoolchild in the Ivory Coast photographed by Patrick Waeles for UNESCO.

during the decade. A middle group, including the populous nations of India, Indonesia, Bangladesh and Pakistan, as well as the countries in the $121-750 bracket, have increased their enrollments by approximately 11 and 4 percentage points, while the most affluent countries have increased their enrollments by 25 and 13 percentage points.

Other implications follow from the difference between enrollment ratios at the lower and upper levels of education. Countries in Group 1 have 43 percent enrollment in primary and only 5 percent in secondary education. Thus, in comparison with others, these countries will have to absorb a higher proportion of the primary school leavers in their societies and labor markets. Such facts should be reflected in the curriculum of the first level of education.

Countries in different income categories show significant variations in their expenditure patterns. (This can be clearly seen in table 2). The table shows the widening difference between what governments in the poorest and in the richer countries spend for the education of a student. This gap does not reflect differences in the educational profiles of countries, namely, relative proportions of lower and higher levels, as the differences in per student expenditures at primary level are in fact even greater. The table also indicates that, in the poorest countries, there was only a negligible increase in public expenditure per student which, if measured in constant prices, corresponds to an actual decline.

Wide divergencies also exist between countries in the same income groups, both as regards educational efforts and outcome. Among countries in Group 1, for instance, Rwanda allocates 10 percent of its national budget to primary education and has achieved an enrollment ratio of 60 percent while Mali allocates 12 percent of its national budget to the same level, but has a primary school enrollment ratio of only 18 percent.

The World Bank's education lending policy and program

A basic premise is that the Bank's operations should reflect its overall policies. The Bank is deeply concerned with the problems and needs of low-income countries and with the promotion of development strategies designed to improve the wellbeing of the lower 40 percent of the population through increased productivity and employment and improved income distribution. The Bank's activities in lending for education increasingly reflect this concern. But while this is a new and dramatic feature of Bank policy, it should not obscure the fact that the World Bank will continue to assist countries which, although having moved to higher levels of development, still require help. A flexible response, adjusted to the variety of conditions in all developing countries, will govern the Bank's activities in education.

Meeting the minimum learning needs of the uneducated masses to ensure that they can both contribute to and benefit from economic and social development is a major task for the poorest countries. The development of low-cost and functional, basic education programs, through the restructuring of primary education and/or other methods, should be emphasized in such countries. In many cases, a necessary complement would include the concentration on rural training for related target groups within the framework of broader rural development schemes. Conversely, the development of upper levels of formal education should be selectively and carefully planned, taking into account both the limited absorptive capacity for labor in the modern sector, and the need for local leadership and technical skills in both the public and private sectors.

The development of secondary and postsecondary levels of education will take a more central place in the education strategies of the middle- and higher-income countries. Where first-level education is already widely available, the development of skills to meet the needs of increasingly sophisticated economies will have priority. In determining the rate of expansion of their education systems, as well as in defining their internal priorities and the choice of institutions and technologies, these countries will have major policy concerns of their own. They must strike a balance between the overall supply of and demand for educated manpower, matching the educational output with the particular needs of the economy and the efficient use of their resources. Middle- and higher-income countries must improve their planning capabilities (no less than the poorer countries), and they must place emphasis on educational reforms as well. These countries will have to pay increasing attention to providing educational opportunities for the urban and rural poor.

Differences in the educational strategies of developing countries will be heightened by the differing effects on their economies and development prospects of the recent changes in the world economy. At one extreme, it is estimated that the per capita GNP of seven members of the Organization of Petroleum Exporting Countries (OPEC) will increase by 8.4 percent per year during the period 1973-80. For such countries, financial constraints will be minor or nonexistent. Indeed, it is clear that they intend to expand education as fast as possible. At the other extreme, ten countries with an annual per capita GNP of less than $200 are estimated to have growth rates during the same period of minus 0.4 percent. It is not yet clear whether such countries, faced with worsening economic prospects, will be able to stick to their goals of expanding educational opportunities, or whether their educational priorities will change. Their reactions to worldwide economic changes need to be followed closely so that the Bank can develop ways and means to respond to their needs in a timely and adequate manner.

Objectives of Bank lending for education

The Bank seeks to promote balanced educational development based on the following broad principles:

- That there should be at least a minimum basic education for all as fully and as soon as available resources permit and the course of development requires.
- That further education and training beyond the basic level should be provided selectively to improve quantitatively and qualitatively the knowledge and skills necessary for the performance of economic, social and other developmental roles.
- That a national system of education should be viewed as a comprehensive learning system embracing formal, nonformal and informal education and working with maximum possible internal and external efficiency.
- That in the interest of both increased productivity and social equity, educational opportunities should be equalized as fully as possible.

Dealing with basic primary education: The Bank's interest in basic education is closely related to its efforts in promoting a broader approach to development. Basic education is conceived as a means by which the minimum learning needs of the masses will be met so as to ensure effective participation in the development process by all. Basic education can thus be instrumental in increasing the productivity as well as improving the opportunities of underprivileged groups.

It is expected that most countries, particularly those with already high primary enrollment ratios, will meet the needs for mass education through an expansion of the formal primary system. For those countries, the Bank will give particular attention to curriculum and other reforms which take account of the needs of the many who will not continue beyond the primary cycle.

The Bank will encourage those countries having the lowest primary enrollment ratios and working under severe financial constraints to review and revise their education structures to meet the need for low-cost, minimum, mass education.

In all cases, the Bank will assist in the development of a wide variety of education and training for adolescents and adults, either as follow-up programs for those who have had primary education, or, in the more extreme cases, as a substitute for nonexistent primary schools.

The Bank will encourage the integration of basic education with other rural and urban development programs.

The Bank must guard against the serious danger of creating prototypes (multipurpose institutions serving whole communities, rural training centers) which are too elaborate and expensive to be replicable on the desired scale.

In table 3 we have noted an increase from 11 percent in 1972-74 to 27 percent for 1974-78 in the estimated share of the Bank's education lending devoted to primary and basic education. Based on current estimates, the volume of lending for primary and basic education in 1974-78 would equal about $280 million in constant prices. To this figure should be added an estimated $90 million for education components included in rural development and "sites and services" projects. Total lending for primary and basic education may, therefore, reach the $350-400 million level. Though this amount should be manageable, it will challenge the capabilities of both the Bank and its borrowers, given the still highly experimental "state of the art."

The most important contribution the Bank could make during the next four years would be to use the period to "tool up" for a substantially greater attack on worldwide educational needs after 1978. This "tooling up" would embrace not only refinements of project criteria, planning, staffing and acquisition of experience within the Bank; it would also include a many-sided effort within the developing countries themselves to increase their capabilities and prepare for a major thrust to be launched in the later 1970s. It would include (a) operational research into demographic, social, geographical and economic conditions related to basic education; (b) development work in curricula, teacher training, institutional models, project design, physical facilities and the use of mass media: (c) planning, policy formation, legislation and budgeting by governments; (d) administrative reorganization and management training necessary to achieve the decentralized, yet coordinated, execution required by a major program; and (e) systematic monitoring and evaluation of ongoing operations.

Table 3
Distribution of education lending (Fiscal years)

	1963-71 Actual (%)	1972-74 Actual (%)	1974-78 Projected (%)
By levels			
Primary and basic	5	11	27
Intermediate	72	48	43
Higher	23	41	30
	100	100	100
By curricula			
General and comprehensive	44	43	31
Technical	29	24	23
Agricultural	15	17	24
Teacher itaining	12	14	12
Health	—	2	10
	100	100	100
By outlay			
Construction	61	49	54
Equipment and furniture	34	44	37
Technical assistance	5	7	9
	100	100	100

[1] Through fiscal 1974, the World Bank and IDA had approved financial assistance for 99 education projects with a total project cost of US$1,936 million and a total lending amount of US$1,059 million. Of this lending, Eastern Africa, Western Africa, Asia (excluding the Middle East), Europe and the Middle East, and Latin America and the Caribbean absorbed 16, 15, 27, 25 and 17 percent, respectively.

The effort envisaged here should not be limited to the Bank and its borrowers alone. If the obstacles of mass illiteracy and ignorance are to be lifted from the path of development, the task will demand a common effort by interested educational assistance agencies, almost all of which are already giving the highest priority to meeting the need for basic education. Preliminary steps to form channels for cooperative action are now being taken. These channels can prove to be a potential vehicle for mounting a massive attack upon this most formidable problem of educational development. They can also provide an opportunity for the Bank to help crystallize sentiment for action among agencies and member countries.

The development of skills: The Bank will continue to support the development of skills to meet the needs of vocational and professional manpower in the urban and rural sectors. The Bank will utilize the experience it has gained in previous lending for the development of skills, and a major part of Bank funds for educational development will continue to flow into this sector up to 1978.

Efficiency: The Bank will continue to encourage efforts to increase cost-consciousness in the management of educaton and support the development of cost-effective education programs and projects. Methods of learning which can save money will also be supported. The Bank will, therefore, assist in developing managerial abilities in education, and will provide technical assistance to develop local participation in educational activities in both rural areas and urban settlements.

The Bank will actively promote the best combination of high educational achievement and low costs in three specific ways.

- Encourage the application of substantial research findings which indicate that class sizes may be increased without a loss in student learning performance.
- Encourage and finance the local design, production and distribution of learning equipment and textbooks.
- Encourage the hiring of teachers with experience in fields other than education.

The Bank will back, through a systematic use of built-in evaluation systems in education projects, further efforts to identify and eliminate the main causes of high attrition and repetition rates. These evaluation systems can lead to improved curricula and selection, and better teaching and learning methods.

Wherever possible, the Bank will attempt to improve the nutrition of prenatal, infant and school-age children, believing as it does that proper nutrition is a crucial factor in the development of human resources. Such attempts can include improved nutritional education in teacher training colleges, in adult education programs and in the curricula of primary and secondary schools. This approach may be combined with feeding programs in schools.

The Bank will continue to emphasize the financial criteria of education projects and development strategies including:

- A sound balance of expenditure between components within the education system and between the education sector and other sectors of development.
- The implications of recurrent costs in both plans and projects, and the replicability of experimental activities.

Education and equity: A final objective of Bank lending for education, as for other sectors, is the improvement of equity, the redressing of imbalances in educational and training opportunities among different geographical, ethnic, social, sex, income and age groups. Providing equality of opportunity is not a program which can be financed in itself; it is, rather, a major criterion which should suffuse all Bank operations.

In its analysis of education systems and policies, the Bank will want to know where the funds really go, who benefits most and how the financial burden is distributed. In some cases, special surveys may be needed to find the answers. The Bank will assist in such surveys and, based on their findings will help design programs to improve the distribution of educational services. This help may be forthcoming even if the program is to be financed by others.

Fig. 3: It is the Bank's position that further education and training beyond the basic level should be provided selectively to improve quantitatively and qualitatively the knowledge and skills necessary for the performance of economic, social and other developmental roles. An expert in handicrafts from the International Labour Organisation is helping villagers to improve the quality and output of potteryware at the Fundamental Education Center in Patzcuaro. (Photo by International Labour Office)

In the five year period 1974-78, the World Bank and its affiliate, the International Development Association, intend to increase their support for educational development. They will do so in the conviction:

- ***that every individual should receive a basic minimum education as soon as financial resources and the priorities of development permit;***
- ***that skills should be developed selectively in response to specific and urgent needs, by training the right people, both urban and rural, for the right jobs — both in the modern and traditional sectors;***
- ***that educational policies should be formulated to respond flexibly to the need to develop educational systems (nonformal, informal, and formal), so that the specific requirements of each society might be met; and***
- ***that opportunities should be extended throughout an educational system for those underprivileged groups who have been thwarted in their desire to enter the mainstream of their country's economic and social life. This must include more equitable access to education for the poor, the ill-fed, women, and rural dwellers, and must provide, as well, a better chance to advance from the classroom to the place of work.***

If economic progress is to be rapid and equitable, education will need to be supported by action in other fields such as agriculture, health, nutrition, and employment. Only in such a context can education be effective in strengthening the potential of those developing nations which wish to ensure productive participation by all in the development process.

Robert S. McNamara
President, World Bank Group
December 1974

ACCESS: Alternative comprehensive community environmental study system

William R. Ewald, Jr

The author, principal investigator of the ACCESS concept, former senior vice president and treasurer of Doxiadis Associates, Inc., Washington DC, has been involved in policy research, planning, design and communication that relate current decisions to the long-range future environment for 30 years. This article is drawn from his final report to the Office of Exploratory Research and Problem Assessment of the Research Applied to National Needs (RANN) program, National Science Foundation (Grant GI-4166) to the American Society of Landscape Architects Foundation. (There were also local supporting institutions.) A one-year pilot test of the ACCESS process is to be jointly funded by federal agencies and foundations led by the Office of Environmental Education, USHEW. *ACCESS is an officially recognized project of the American Revolution Bicentennial Administration. On February 3, 1976, ARBA endorsed the ACCESS project as a national Horizon project in the "Call on Achievement" program.*

The idea underlying the ACCESS project is a simple one. ACCESS is a national prototype exploration into new means to assist democratic policy making at the regional level.

The ACCESS project was undertaken to design a new process to improve regional policy making through policy dialogue informed by research, which makes appropriate use of science and technology, assisted by graphic telecommunications.

The ACCESS project is especially concerned with perception and communication. Communication of facts, ideas and feelings is the cement of all human organization. In a free society the binder in that cement is "truth." For truth to make its contribution freely it must continuously be discovered, rediscovered, communicated and perceived.

Reeducation for change

The ACCESS project assumes that this is a time of extraordinary change, that this change is pervasive, and that to manage it will require us to reeducate ourselves to the task.

The purpose of the ACCESS project is to design and explore a process which manages information needs at the regional level for policy making concerning the quality of life in a technological epoch. As such, ACCESS is concerned with making the complexity of reality comprehensible for the purpose of policy makers, including public participants. A fundamental tenet of the ACCESS process is that visual communication is essential to the understanding of this complexity.

Constrained by the extreme pressures of explosive change, present institutions concerned with managing the environment have often been unable to:

- *Consider the long-range impacts of present actions,* for example with regard to such problems as energy usage, natural resource allocation and environmental hazards;
- *Design and implement integrated decision-making processes.* This failure has resulted in (a) unnecessary and costly redundancies in data collection, policy formulation and program design; (b) the inability to coordinate planning efforts in circumstances which require swift and concentrated action beyond the capacity of any single local institution or agency; (c) the inability to coordinate vitally needed large-scale programs in such areas as transportation and housing; and (d) misunderstandings and friction among planners and between planners and the lay public;
- *Institute systematic and effective programs to obtain public feedback on proposals likely to incur significant impacts.* Public involvement is particularly necessary in the early stages of a planning process, when citizen input is valuable both substantively and in terms of forestalling potential future criticism and opposition;
- *Experiment with and employ powerful information processing and graphic technologies* now available to analyze, synthesize and communicate regional problems and alternative solutions to regional decision makers and citizens.

Our survival and wellbeing depend on our ability to harness our resources effectively to solve the problems which confront us; and at the same time, to protect and promote such values as freedom and representative government.

Therefore we need to create more accurate perceptions of problems, causes, impacts and options; and create better consensus about the problems which confront us, and their possible resolutions.

Access for people to information, expertise and to each other is the new necessity of life. Policy dialogue is a needed key for this new coming together in society.

Since the problems which confront us occur at all scales of decision making — international, national, regional, state and local — effective policy dialogues, informed by research, are needed at all levels. No one planning/decision-making system can resolve the difficult problems which confront us. It is vital, therefore, that attempted improvements be explored at whatever scale is appropriate to the problem. The ACCESS project is focused at the regional level.

For the development of a future environment that admits and enhances the rational-unrational-extrarational qualities of individuals, we need the scientific approach: to observe, relate, abstract, distinguish, deduce — and more. We must start with an encompassing philosophy derived from our values and proceed straight through a whole system (reconnaissance and research, analysis and design, decision and delivery) to the construction procedures that complete the human projects (fig. 1).

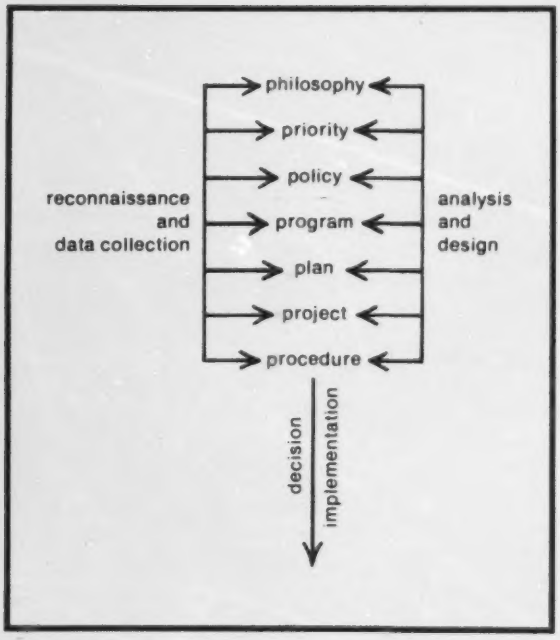

Fig. 1: Process for creating a human environment. (Adapted from Ewald, *Creating the Human Environment*, [Urbana, University of Illinois Press, 1970.])

To avoid becoming a planned society, we must become a planning society. It is further suggested that to achieve a planning society, we need a dialogue which assumes the good will of all parties in each situation and calls upon such techniques of factual exposition as the computer, graphic displays, and seminars.

Through the ACCESS process, expert, complex and abstract information about the future would become more *manageable* by society because it would be as close to people as the "region" with which people identify — and oriented to that region. The process would be *credible* because it would be kept up to date and would be open to, supported, challenged, operated and used by all the special interest groups of a region (as well as business, government and education) — and it would not take sides, but it would explore options. Its examination of alternatives would be more *understandable* because it would make full use of all means of communication, including interactive graphic telecommunications.

Modern telecommunications providing for interaction with graphic displays may be the major means to make interdisciplinary regional policy research processes democratic and do-able, even for very large regions.

If we are to manage, conserve and develop the environment, decision makers and society at large, in a democracy, need to recognize the rates, causes, orders of magnitude and complexities of change — and the critical nature and timing of decisions to deal with change. This implies regional policy research, where communities of people consider more deliberately than ever before the long-range future consequences of decisions which must also accommodate the present.

The center of focus of the ACCESS process is the official decision maker of government and business. In concentric spheres of influence around the decision maker, the process also includes his support staff, consultants, boards and commissions; then special interest groups and concerned citizens, and finally, the voters.

Without itself taking sides or making decisions, the ACCESS process for regional policy dialogue provides comprehensible information and citizen feedback for the regional policy makers. The process involves neutral forums for policy dialogue, informed by research which attempt to understand choices, consequences and their connection to the past, the present and the future environment. In this report, the term environment encompasses cultural, social, economic, political and spiritual aspects as well as the physical.

The regional policy maker: It can be seen that the term, "regional policy maker," as used in the ACCESS process, concerned with as broad a definition of environment as given above, is all-inclusive. "Regional policy maker" includes those who

contribute to the formulation of policy as well as those who decide policy. Both are considered part of "policy making" in the ACCESS process. Therefore, interested citizens, as individuals and as organization members, or voters, are policy makers — as are corporation directors, education administrators and government officials, elected or not.

Credibility: To exchange concepts, issues, information, analyses, judgments, and feelings about regional issues with these regional policy makers — in such a way that the basic choices buried in pending current decisions are related to alternative futures — requires more than valid analysis and communication. The process as well as the information it handles must be accepted as credible. A major aspect of the credibility of information, obviously, is its source. But how the perception of information affects its credibility is more significant than the scant attention it has been given to date. This is a matter not only of how minds are already "set" when they receive information, but also how information is presented to them. The physiology and psychology of how we see and receive information is important to policy making.

Information, even if it is accurate, valid and reliable, must be comfortably assimilated by a person, to the point it "feels right," before it becomes credible. It may be that information must become something akin to an "insight" or "institution" before it leads to decision. If intuition, in turn, can be defined as subconscious reasoning, then whatever helps that reasoning has a significant effect on credibility.

The purpose for bringing more of the capacities of science and technology to regional decision making is to convey analysis and information with credibility, to synthesize complex problems and to reduce uncertainty.

What we are attempting with visual communications, especially interactive graphic telecommunications, is to establish new capabilities for feeding information to those minds. An example of that "process" may be how the concept of Spaceship Earth was quickly "sensed" from the Moon photographs taken by the astronauts. An entire perspective was perceived. (How puny the words of astronauts compared to their photographs!)

Nonverbal graphic symbols communicate to many levels simultaneously. Such graphic communications may become a "universal" language for policy makers, managers, workers, learners and consumers about their region. The same information, used differently by researchers, policy makers and the general public, may be communicated in the same form, through the same technology, using the same systems.

If people do not understand because they fail to perceive the "whole" of complex systems, because they lack a "perspective of reality," perhaps, by using common graphic symbols, people of a region can perceive more perspectives in common, including the understanding that different people, with the same information, may arrive at different perceptions. If so, then facilitating the perception of "wholes" will be among the greatest contributions graphic nonverbal communication can make to constructive regional dialogue.

The balance of people and expertise is at issue. The reasoned view in these times is more often "both/and" rather than "either/or." The ACCESS process, employing visualized regional policy dialogue, facilitates the "both/and" approach.

At least as important as the accuracy and timeliness of the information required for regional policy making today is whether it is understood and believed. Confidence in the objectivity of the organization that manages the information process itself is a vital aspect of the information it provides. The ACCESS design proposes a nonprofit organization constituted by and responsive to the many different interest groups of a region.

Design through action: Design of the ACCESS process is to be found, in part, only in the doing. The ACCESS project as research, therefore, has confounded more than a few. Real issues, people, experience and circumstances of the region selected are in themselves important parts of the project, and the means for refining the design for the ACCESS process. Obviously, they cannot be "controlled variables" as is true in physical and natural science research. The ACCESS project is, and must remain open to, and involve, a broad spectrum of interest groups, each contending differently with the changing and conflicting realities of the region. It cannot know in advance precisely "how" to go about the design it is involving the people of the region in creating. The "how" is actually a major part of what the project is attempting to explore and learn.

To combine action with research, people and technology, society with science (and each of these with each of the others at the regional level) in these fast-changing times, requires not only precise but many different kinds of knowledge. The ACCESS project asserts that the opportunity needs to be created to study means to work that knowledge into specific issue resolution with "wisdom." "Wisdom," as it is conventionally defined, is seen as more likely to occur through regional policy dialogue. Such dialogue must recognize and facilitate the potential for different contributions from many different people for self-government by enlightened citizens.

Ten basic design elements

These ten elements have become the context and structure for both of the next stages of the ACCESS project. First for the one year Pilot Test and then for the three-to-five year regionwide system research demonstration and verification.

People: The ACCESS project has been cited by experienced local community leaders as the most diverse assembly of people and capabilities in the South Coast Region of Santa Barbara, California (fig. 2). This diversity is a requirement of interdisciplinary regional policy research and a necessity if its work is to be credible.

Policies: Through a series of deductive work sessions the diverse membership of ACCESS established the function and the issues which seemed most appropriate for an initial demonstration of ACCESS process capabilities. The function selected was for ACCESS to serve as a neutral regional forum. The issues it selected to examine for options and long-term consequences were: (1) fuel breaks in the Santa Ynez Mountains, and (2) the impact of water quality and quantity on land use.

Interrelationships: The ACCESS process intends to assemble and make available skills and tools that no one existing institution can afford or appropriately operate. In that ACCESS takes no policy decisions itself, nor attempts to implement any, it should be able to sustain relations with diverse groups. These groups may themselves be continually combining in coalitions, often temporarily, regarding a specific issue.

From informal beginnings, formal interest and specific offers of support have grown up, especially within federal agencies. They recognize in the ACCESS project a potential approach for research and learning in some of their toughest problem areas — credibility, involvement, rational understanding. The presentation of issues, typically, is underfunded. This is now ready for testing on a pilot basis with the University of California, Santa Barbara, as applicant, and Community Arts Association (a nonprofit local institution incorporated in 1923) as manager of community involvement in the process. This combination plus a consortium of federal agencies with related missions as funders and users of ACCESS research may be the basic beginning of the national prototype process ACCESS was designed to be.

Social processes: The methods by which people of the region are involved and address important policy questions in the ACCESS process are here referred to as "social processes." This includes such factors as duration, sequence and organization of the activities for the dialogue; number and roles of the individuals involved; geographic scope; and remoteness of the issue addressed by the dialogue in terms of time, space and level of abstraction.

Intellectual tools: The uncertainty and complexity involved in regional issues call for an awareness, skill and selection of the appropriate "intellectual tools" to help address basic policy questions. These tools include, for example: trend extrapolation; use of expert opinion; Delphi; relevance trees; scenario writing; checklists; PERT charts; cost benefit, cost effectiveness, risk and sensitivity analysis; historical analogy; model building, gaming and simulation; decision theory; decision trees; matrices; cross-impact analysis; networks; morphological analysis; statistical correlation, planning, programming and budgeting systems; and management by objectives.

Fig. 2: The South Coast region of Santa Barbara County, California, seen from a NASA satellite, 565 miles above sea level. The area outlined as the site of the ACCESS project is home for 163,000 people and stretches 60 miles east to west along the coast, 90 miles northwest of Los Angeles. (Composite photo courtesy Department of Geology, University of California, Santa Barbara)

Technological tools: Telecommunications are important to the analysis, accessibility and comprehension of regional policy data. They will be experienced first in visualized dialogue in the Regional Situation Room. Ultimately there is to be a capability to help study and communicate about regional problems and options, and to obtain feedback and stimulate discussion that is available throughout the region via coaxial cable television.

The emphasis is on graphic techniques to synthesize and display issues and options; using such technologies as maps and physical models; aerial photography and satellite imagery; gaming and simulation; computer modeling — involving the use of interactive computer graphics; citizen polling and feedback systems; and broadcast and cable television.

Institution — organization: A claim of the ACCESS concept is that as the long-range consequences of sensitive regional policy issues are more clearly understood and more broadly communicated, challenges of credibility will increase in importance. It can be anticipated that the credibility of the

organization that manages the process which studies and communicates about the future "quality of life" in the region will greatly affect its utility. There must be community acceptance of both the competence and the objectivity of the organization, for the process to function as intended.

Widespread and diverse involvement was sought from the outset.

Resources: Resources, as defined here, include the staff, participants, funds and facilities required of the ACCESS process.

The shift of the ACCESS project's broad sponsorship from the Research Applied to National Needs (RANN) program of NSF to the Office of Environmental Education in the Department of Health, Education and Welfare, has held onto federal agency interest in and financing of the ACCESS project. (Local funds are not being sought in this stage, which is intended as a national demonstration of the ACCESS concept rather than an immediate resolution of a local problem.)

Given national recognition of the ACCESS project, its successful operation during the Pilot Test is intended to locate the national, state and local support required to sustain a three-to-five-year Regionwide System Research Demonstration and Verification. The basis for sustained public, private, utility and education support (and fees charged) will be dependent on the feasibility and scope of services provided.

Evaluation: To rigorously examine policies, actions, impacts and design of the ACCESS process requires documentation, close monitoring, wise judgment and the sophisticated application of evaluative research. Validation of the ACCESS process will involve quite different methods and criteria from those common to the natural and physical sciences.

Utilization: Utilization refers to the transferability of the perspective, process or products produced by the ACCESS project. A major factor of utilization is simply that understanding of the project, and what it has learned be widely disseminated. The other major factor is to structure the research itself so that it has the potential of wide application.

The Regional Situation Room

A major component of the ACCESS process and focus of its research, is the Regional Situation Room. It is a direct descendent and combines elements of the New England Town Meeting and NASA's Command and Control centers (for satellites).

The Regional Situation Room is a facility which provides a new means for science and technology to make their contribution to public policy making.

The uses of a Regional Situation Room are:

- To monitor the flow of information relevant to ongoing basic planning activities and systematically to collect and disseminate that information which is particularly important to informed public discussions of major issues;
- To establish neutral forums for policy dialogue and graphic communication of complex policy problems and options;
- To synthesize, analyze and communicate problems and options, including costs, benefits, and risks;
- To make available a means whereby citizens and policy makers can more easily and intuitively see and understand the critical elements and interactions of large complex problems and to obtain a sense of the degree of ignorance and uncertainty concerning such problems;
- To enable individuals who are in potential conflict to focus on the problem "out there" displayed through the use of various graphic techniques;
- To provide a means to develop better perceptions and consensus on problems and options, and through the process of dialogue, to develop shared values, increased trust and agreement about desirable choices.

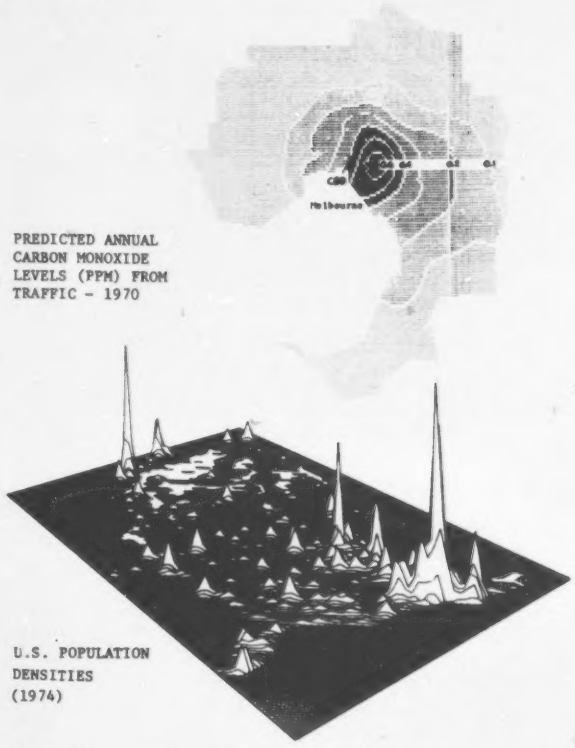

Fig. 3: Computer-generated display of data and "instant" graphic response to viewers' "what if" questions, can be programmed in black and white or color, animated or static, for a Regional Situation Room. Ultimately, by means of coaxial TV, this information exchange could be made available through a region. (Illustrations courtesy Laboratory for Computer Graphics and Spatial Analysis, Harvard University.)

- To design procedures which will promote broad public discussion of issues and ensure that citizens' views will be more frequently and seriously considered by policy makers;
- To strengthen long-range regional planning, emphasizing the need to take into account the future consequences of present actions and policies;
- To stimulate the creation of new forms of planning action where traditional techniques have proven insufficient to cope with the special problems and pressures of radical economic and social change; and
- To use and experiment with the vast possibilities of the new information collection, analysis and display technologies. For example: remote sensing, photogrammetry, computer generated graphics, simulation, and gaming.

A wooden griffin sign that hangs over the sidewalk at the entrance to Meridian Studios was adopted as the symbol of ACCESS. (In Greek mythology, the griffin protected the treasures of Apollo, God of Reason. ACCESS protects the treasures of the South Coast Region.)

The one story, one room Lugo Adobe with its brick patio in back, adjoining office and facilities, has served as the meeting place for ACCESS since May 2, 1974. The adobe has connection with history as the house for one of the soldiers of Santa Barbara's Presidio, over 160 years ago, and as the office in which Pearl Chase, "patron saint" of Santa Barbara, began her work for the community over 50 years ago. It is marked as a historic landmark of Santa Barbara on many maps.

The "Regional Situation Room" in the Lugo Adobe, is a 19 ft by 34 ft, 12 ft high, raftered room with a skylight. The room has been fitted with ceiling track lights; tack boards for maps and project information line the long walls. Four major tapestries (4.5 ft by 10.5 ft) by artist Norman LaLiberté, symbolizing "art," "spirit," "science" and "technology" are hung on tracks at the end opposite the fireplace. They slide to one side to provide a whole wall for graphic images.

Two 35 mm slide projectors, a 16 mm movie projector, a high fidelity sound system and a small film library are housed in a projection booth fitted onto the fireplace wall. There are 49 chairs in all in the room, including those against the walls. The outside patio has space for another 100.

The conference table was designed for a 13 ft by 4 ft (2,000 ft scale) topographic map or model of the region. It can disassembled into six 6 ft by 3 ft tables. The Regional Situation Room has been made available to other groups as well as ACCESS for their meetings. There is no sense of technology in the room and that is deliberate. It is first of all a pleasant space in which to meet and discuss.

During the one year Pilot Test, only the simulation of a Regional Situation Room is practical with such minimal equipment. Videocassettes will be used with the Advent projector to display 6 ft images. Graphic images will be interactive at this stage in the sense that the visualizations of each alternative for the test issues stored in videocassettes can be called up for immediate projection by means of the program locator. Available computerized data coupled to the Advent projector can also be called up and displayed.

The ACCESS project will make use of all means of visual and oral communication, but will design its information storage and processing for computer-handling compatible with television display at a rate that is practical for the users of the process and within the financial capacity of the project. The basic concept is to devise a test project that provides the opportunity to study visual means of communication as used to facilitate dialogue, understanding information concerning regional policy issues, options and impacts, and responsible citizen contribution to regional policy making.

Futures studies: an international survey

John McHale and Magda Cordell McHale

The authors carried out this study at the Center for Integrative Studies, School of Advanced Technology, State University of New York, Binghamton, New York, for the United Nations Institute for Training and Research (UNITAR). This article is abstracted from UNITAR Publication sales no. E.75.XV.FS/1 ($4.00). EKISTICS has published extracts of a number of studies by the McHales including "An assessment of the world food gap," in January 1975.

This study is descriptive rather than definitive. It is concerned both with futures studies as formally defined and with other activities which are concerned more generally with the future.

The interests which generated the study arise from an awareness by UNITAR of the need for more systematic engagement with long-range prospectives.

The institute recognizes a common urgency about the longer range aspects and interactions of world problems. Wholly unilinear and short-term approaches are no longer appropriate. We live in a highly interdependent world system whose complex interrelationships must now be viewed in terms of their longer term consequences and implications.

The common awareness and sense of urgency have generated much debate regarding the alternative kinds of futures which we may face. Some advocate limitations on certain aspects of material growth; others are more sanguine about the possibilities of further global development.

Underlying these extreme positions is a renewed interest in future perspectives not only in the shorter term of the next decade but extending up to and beyond the symbolic benchmark of 2000.

This interest has been accompanied by a rapid growth in futures studies and a proliferation of future oriented activities in many societies around the world. Various levels of engagement in this spectrum of concern range from official government commissions to local citizenry group and world assemblies.

Field definition

In these summary notes on the range of futures work, it may be useful to qualify some of the terms in general use.

Those describing the overall field itself, exhibit considerable variety. Futuristics, futurology, forecasting, and futures research are all used widely, and somewhat interchangeably. *Futuribles*, the word coined by de Jouvenel, tends to be restricted to Western Europe. There is a preference for *prognostics* in Soviet and Eastern European usage, with additional descriptors such as social, economic, political and so on. As the field has grown in respectability, *futures research and forecasting* tend to be preferred in more academic discussion.

One might comment that almost all of the terms are somewhat misleading. They carry the implication of the opening up of a new field of knowledge with varying overtones of scientific rigor. This often raises expectations beyond what the field can provide. We have, therefore, used the more modest and ambiguous term, *futures studies*, in this report to convey the idea of an activity which embraces many elements — of prediction and conjecture, and of imaginative extrapolation and normative projection. The central emphasis is on the study of the future.

This preference also carries within it the idea that the main purpose of the activity is not to prophesy what a specific future will be, but rather more to explore the plurality of future(s) states which may be contingent upon our actions or accessible to our choice.

There is a shift within the field itself, from an emphasis on prediction and linear forecasting towards normative modes of considering a range of alternative futures. Those involved in futures studies are now generally concerned with "alerting" functions, which may indicate ranges of positive and negative consequences resultant upon present or

proposed courses of action, and with exploring the costs and benefits of alternative value preferences, goal orientations and human options.

One might also differentiate between forecasting, long-range planning and futures studies. In practice these may be woven together but they do have certain independent aspects.

Some highly generalized characteristics may be listed as follows:

- *Forecasting* tends to assume some set of definable causal relations between events through which one can predict their future states — with varying levels of probability of occurrence. Many forecasting activities are also restricted within some *given* set of value premises. This applies particularly in much economic and technological forecasting.

  This latter "value free" aspect is undergoing subtle transformation as activities such as "technology assessment" grow in importance. Such assessment procedures, by their nature and origin, are arrayed against more specific value preferences.

- *Long-range planning*, though emphasizing the long range, is generally concerned with the organization of events within the next five to ten years as in much corporate and governmental planning. Its horizons are usually limited by its functional relationship to some specific sector of the society.

  Such planning is also characterized by *implied* value assumptions. The concern is with how some activity may be planned, rather than with why it should be planned. The latter may be discussed within the process but the tendency is to assume this as given and to proceed with the more instrumental aspects of the planning activity itself. Again, as the longer range planning process begins to move to the international level, differences in value preferences have moved to the fore. In national planning, the need for better "social indicators" to aid the planning process has lead to more explicit value measures within the process.

- *Future studies* tend to be oriented towards the longer term, as extending beyond the next two or three decades. It is essentially an open ended and less definable process as to its methods and approaches, than forecasting and long-range planning.

  Though many such studies are tied to a specific sector of society or to some closely focused area of activity, there is less tendency to identify with the given structural premises of the sector or focus of the study. It is assumed that these are also open to speculation as to their futures.

  More often than not, future studies are concerned with *explicit* sets of value considerations and preferences. Rather than assuming the given nature of larger causal relations these are taken as open to question. There is an underlying shift from what may be feasible under given constraints to what could or should be possible and/or desirable — if we choose to alter the constraints upon present and future actions.

Another way of classifying the overall group would be according to their primary orientation and methodological approach. For example:

- *Descriptive:* As embracing various conjectural, speculative and imaginable modes. This would include a wide range of studies from essays on the future of some particular human activity to "whole society" futures in which a variety of alternative directions may be described.
- *Exploratory:* This term is usually for the methodical extrapolation of past and present developments into the future, i.e., including economic and technological forecasts and scenario building. Delphi exercises and cross impact analyses belong in this group though many uses of these methods are non-extrapolative, and prescriptive.
- *Prescriptive:* This approach is essentially one in which "normatively" oriented futures are projected where strong value assertions and choice are presented within a framework of alternative states.

The survey

This study is an extension of several surveys of the futures field carried out by the center since 1969.

For the present survey, a new listing of organizations and individuals was prepared from the authors' own files and a literature search of major source works in the field. This was expanded in various ways by:

1. Including the United Nations missions and secretarial divisions and the other United Nations agencies;
2. Circulation of the scientific attachés to the embassies in the United States;
3. Letters of enquiry regarding survey candidates to the national academies of various countries, and other types of national institutions;
4. Corporations selected from many sources;
5. International nongovernmental organizations listed in various yearbooks.

Criteria for inclusion in the final survey were based on:

1. Production of work in the field as formally defined;
2. Frequency with which organizations and individuals were referred to in the literature;
3. Other activities which contribute to the overall development of the field, such as conference and work group organizations, coordination of projects, documentation work;
4. Potential contributions to the formation of and influence on future developments, even where these were not identified as futures studies and/or long-range planning activities per se.

Table 1
Percentage breakdown by type of organization

No.*	Percent		No.	Percent	
74	18	National governmental	5	1	International voluntary association
39	9	International governmental	1	0	National professional organization
25	6	International nongovernmental	10	2	International professional organization
30	7	Industry	3	1	Trade union
19	5	Business	60	15	Independent research center
86	21	Academic center	13	3	Membership society
4	1	Commission/advisory group	4	1	Ad hoc study group
8	2	National voluntary association	31	8	Other than above

* Number of organizations responding

Though the survey was primarily designed to elicit a profile of future studies and associated long-range planning, it was not restricted to those primarily engaged in such work. We were also concerned with the identification of activities which affect future developments in the longer term, but are not formally defined as futures studies.

Examples of this latter category would include:

- Science policy, technology assessment, social indicators work, and so on;
- Corporate planning of various kinds;
- The work of some governmental and nongovernmental organizations, though not defined as futures studies or long-range planning, in the conventional sense, is concerned with the future consequences and implications of human action;
- Research and development activities which might influence and shape the future.

The end listing contained over 3,000 entries. Given time and other constraints we decided to use a mailed survey form, even though such a method has obvious disadvantages in attempting to elicit a detailed profile of the kind of work being done by such a variety of individuals and institutions.

Two separate questionnaires were designed for organizations and individuals. Each contained respectively 30 and 32 questions bearing upon the orientation of work being done, specific engagement with futures studies and long-range planning, methods used, support structure, and so forth.

Though the survey forms were organized for computerized analysis, respondents were encouraged to give additional comments and enclose appropriate supporting materials.

Forms were mailed with an explanatory cover letter to those on the final list — approximately 3,000.

Some potentially large contributions from specific nations, such as the USSR and the People's Republic of China are either meagerly represented or not represented at all, despite efforts to secure an adequate response by the due date for this report. This may, of course, be remedied later as further returns accrue.

A cut-off date for machine processing of completed questionnaires was set for mid-February 1975. By this time, *926* of these were in hand.

This analytical base of *926* should not therefore be regarded as a "methodical sample" in the usual sense. It is, however, sufficiently representative of the range of the response to give various comparative measures to the balance of orientations, methods, and approaches in the overall field.

Development of the field

In the past ten years, futures studies, forecasting and long-range planning have expanded considerably both in the numbers of persons and organizations at work and in the range, volume and types of activities in which they are engaged.

One index of this would be the growth in size of world congresses. The first such conference in Oslo, 1967, had approximately 30 participants; the second, in Kyoto, 1970, had over 250; the third in Bucharest over 300.

These are conferences of those specifically involved in futures studies, or "futures research," as formally defined. The increase in the number and frequency of such meetings would be even more dramatic if one included the growth in more specialized conferences in other disciplines such as anthropology, sociology, and political science, which now contain "futures" sections on their agendas.

The number of organizations concerned primarily with futures work has grown, and the adoption of longer term perspectives by other types of organizations has increased significa[illegible].

In terms of our current survey, several tendencies may be noted within the overall field.

The first would be the expected and normal drive for professional recognition and higher standards of

methodological rigor by those accumulating expertise and experience in the field. This is reflected: (a) in the rise in the number of journals and newsletters devoted to futures, forecasting and long-range planning, and (b) in the numbers of courses on various aspects of the field being offered at universities and indeed throughout the educational system.

The perception of world crises in population growth, energy, food and materials supply, fueled by media coverage of their future dimensions has turned many shorter range preoccupations towards longer term perspectives. This has been reinforced by the world attention and prestige given to the emergence of large-scale studies of "The Limits to Growth," and others sponsored by the Club of Rome. The impact of best sellers such as *Future Shock* by Alvin Toffler, translated into many languages, has also exerted considerable influence.

In addition, the number and range of professionals coming into the field from other areas has risen and changed, particularly over the past five years. Where the earlier predominance was in physical sciences, engineering and mathematics, more recent expansion has come from the social and behavioral sciences and humanities.

The second tendency has been from futures work as a kind of disciplinary enclave towards becoming a social movement. Other issue-oriented movements, such as civil rights, ecology, consumerism, anti-war and so on, have had their successive waves of popular attention and participation. As these "burn out," many of their adherents have moved over into involvement with the future. The themes of such involvement tend to be carried over also from their previous locus; for example, the ecology issue translates into the future of spaceship earth.

As we shall note later, some of these social movement involvements coalesce into larger associational groupings. In the US for example, projects such as Hawaii 2000 and Iowa 2000 draw their broad participant support from those who are, or were, active in other issue areas.

Table 2
Type of organization and time range of consideration

	Total	Range		
		Short 5-10	Medium 10-25	Long* 25+
National governmental	74	26	34	12
International governmental	39	19	15	3
Industry	30	19	9	1
Business	19	10	6	2
Academic center	86	32	38	11
Independent research center	60	23	21	13

* Sub-sample of six major types of organizations.

The third direction has been somewhat conditional on the first two above. Given the normal institutional lag, there are a growing number of futures secretariats, commissions or study groups at national governmental levels. These have been linked, in part to the development of international initiatives by the United Nations, and other bodies, in projects like the World Environmental, Population and Food Conferences which have generated concern with longer term challenges and issues.

To summarize these tendencies figuratively, one might say that the futures field has gone from the small, and rather steep, pyramid form of its earlier phases to an hour glass formation.

There is a large popular base, a relatively constricted and more slowly growing number of professionals in the middle and a widening of official organizations, governmental and otherwise, at the top.

National governmental levels: This aspect is rendered somewhat more complex by the difference in what we call the centrally and noncentrally planned economies.

The former, with the USSR as prime example, have always been committed in various ways, to longer term planning — to 5-, 10- and latterly 25-year plans. These, though economic in overall emphasis and direction, have been extended into many other spheres.

As Inozemtsev notes.

> The contemporary system of planning and forecasting in the Soviet Union incorporates almost 60 years of experience in the development of the world's first socialist state. Applied to regions with initially unequal levels of socioeconomic development and different historical traditions, this constructive experience covers production, social and national relations, politics and state administration, science and technology, culture and other fields of the spiritual life of man.[1]

In the Eastern Europe countries with similar outlooks, such long-range planning and futures work is also most typically carried out via their various academies. In Czechoslovakia, one such key study into that country's long-term future was prepared by the "Interdisciplinary Team for Research into the Social and Human Implications of the Scientific and Technological Revolution"[2] of the Academy of Sciences' Institute of Philosophy and Sociology.

In Poland, the Polish Academy of Sciences has its Research and Prognostics Committee whose work is regularly published in its own journal *Polska 2000*. Sicinski summarizes this discussion for the socialist countries as follows:

> Studies into the future are carried out, first of all by several centers in the USSR, most notably by the Soviet Academy's Institute of Sociological Research. Forecasting projects are also pursued in the GDR (i.e. economic forecasting system), in Czechoslovakia . . . in Hungary, Bulgaria and Yugoslavia. Some forecasting projects have also been undertaken within the framework of the Council for Mutual Economic Assistance.
>
> In Poland, prognostical studies are carried out mainly by the Planning Commission attached to the Cabinet,

the "Poland 2000" Research and Forecasting Committee set up in 1969 at the Polish Academy of Sciences, and by the Ministry of Science, University Education and Technology, by the Center for Prognostical Studies, Warsaw, Wroclaw Polytechnical Institute, et al. The Social Prognoses section at the Institute of Philosophy and Sociology, Polish Academy of Sciences, specializes in research into the future of culture and related methodological problems . . . forecasting or prognostication is treated as a separate field of research carried out in close connection with planning . . . although perhaps the problem of mutual relations between these two fields has not yet been sufficiently defined.[3]

Turning to the less centrally planned economies, the picture is somewhat different.

In Sweden, a Working Party on the Future was set up in May 1971 by Prime Minister Olof Palme. Alva Myrdal, then minister of state, was appointed chairman. Out of this has come the Swedish Secretariat for Futures Studies which is administratively attached to the Cabinet Office. Their first report of 1972, *To Choose a Future*, discusses topics of specific concern for Sweden but also reviews global and national activities in the futures area. It also reports on the work of nongovernmental Swedish futures organizations, to which we will return below.

In the Netherlands, long-range planning is somewhat more closely linked to government. The Central Planning Office has issued a report, *The Netherlands Economy in 1980*. The Ministry of Transport and Public Works published a projection into the future entitled *T. P. 2000*. The Provisional Scientific Council for Government Policy, which evolved out of the Wolff Committee for Research in the Future Structure of Society (1968), is set up

> to obtain some idea of the future of society, give a comprehensive picture of this and place the Government in a position to pursue politics that are rational in the light of developments anticipated in the long term . . . . The Council's position is somewhere between the Government and society at large.[4]

This diversity of linkage between governmental ministries and other futures research units external to government is typical of Europe generally. One of the more important quasi-governmental centers has been the Scientific Directorate of OECD which pioneered, and encouraged, many long-range studies under the directorship of Alexander King.

Table 3
Annual funding

6 %	Less than $1,000
9	$ 1,000 - $ 10,000
9	$ 11,000 - $ 30,000
8	$ 31,000 - $ 50,000
11	$ 51,000 - $ 100,000
16	$101,000 - $ 300,000
7	$301,000 - $ 500,000
7	$501,000 - $1,000 000
12	Over $1,000,000

The United States has been curiously laggard in its pursuit of such work as an "official" government business, considering the leading role that American futures workers have played in the development of the field. This is partially explicable in terms of traditional avoidance of centralized long-range planning, apart from defense and aerospace, and of spreading such work amongst a variety of nongovernmental institutions. The Rand Corporation has been one of the main conduits for such work and has in turn spun off, directly and indirectly, many of the key centers and researchers in the field, for instance, Herman Kahn, Olaf Helmer, and Theodore Gordon of the Hudson Institute, the Center for Futures Research, and The Futures Group respectively. This tradition has been continued through various "futures" support programs of the National Science Foundation in recent years.

Quasi-governmental activity in the US has also taken the interesting direction of involving large-scale citizenry groups in futures speculation at the state and regional level. The pioneer model of this type was Hawaii 2000[5] which subsequently led to a Governor's Commission on Hawaii 2000. Others have followed this lead.

The role of international governmental and nongovernmental agencies in the field is somewhat less clear. Much future oriented work is carried out within the framework of organizations whose principal mission may be a much wider one. Most of the major agencies such as UNESCO, UNEP, and FAO have conducted specific studies on the future of education, of environmental impacts and on the long-term world food supply as appropriate to their mission. Other nongovernmental entities such as the International Council of Scientific Unions make a less direct, but nonetheless important, contribution via programs such as "Man in the Biosphère," which have long-term prospective viewpoints.

One of the key contributions to future studies was the Commission on the Year 2000 set up by the American Academy of Arts and Sciences under the chairmanship of Daniel Bell. Its report, in 1967,[6] quickened scholarly interest in the area and remains a model for this kind of organized enquiry.

Research centers and institutes: On balance, the bulk of the substantive work in futures studies is carried out in this type of institutional framework. Despite the support and manpower figures given in the analysis which follows, most of the key centers are relatively small both in numbers of persons and range of financial support. The larger funding and manpower figures are skewed towards governmental and other agencies, whose primary mission may be in some other area, but their survey data may include all activities.

One interesting point which emerged in our earlier surveys, and still holds true, is that much of the pioneering, large-scale multivariate futures projection is done by individuals and groups, not in institutionalized programs labeled as futures

studies. They are often not primarily funded for such work but support it from their other professional activities.

As the field gains in interest and validity, such individual positions become more difficult. The larger organizations, which failed to support such long-range exploration when it was less fashionable now move into the area with greater resources and personnel — though often still lacking the insights and vision of the individual worker. The latter is progressively squeezed out, just as the work which he or she pioneered gains wider validation and support!

As in other areas of enquiry, organizational support tends to go to other organizations, and rarely to the individual. Consequently, as the more creative and original workers are pushed successively into more marginal positions, the overall substantive contributions to the field are correspondingly diluted. This process is not confined to futures studies but the peculiar nature of the field intensifies it considerably.

World order and world modeling projects: These are of sufficient interest and significance to require a note by themselves.

The "World Order Models Project" was initiated by the World Law Fund. This has proceeded via international study teams set up in various countries around the world to explore alternative models for future world orders in the next 25 years.

The basic approach is organized around agreed value sets and goals.

> In designing the World Order Model for the 1900s, we assume the following three goal values: peace, welfare and identity. These are our World Order values, and the purpose ... is to set forth an approach to the model of World Order most suited to the optimial maximisation of these values.[7]

The DEMATEL project, funded by the Battelle Institute, is one of a number of future oriented studies being conducted by this organization. Its principal aim is to strive for a better understanding of the structure of worldwide problems. The acronym is derived from the creation of a simulation center for testing global policies — *DE*cision-*MA*king *T*rial and *E*valuation *L*aboratory. The two main components in this research activity are:

1. the development of *innovative methods* required for dealing with the qualitative and events-linked aspects of societal problems.
2. the development of man/model interactive techniques for facilitating the dialogue between action and research.[8]

This Battelle program is remarkably similar to The World Game[9] project of R. B. Fuller's developed at the World Resources Inventory Center, Southern Illinois University in 1966, and ongoing in various forms by student groups.

The Club of Rome sponsored projects may be pertinent here. The most recent Club of Rome project was reported in the book *Mankind at the Turning Point*, by Mahajlo Mesarovic and Eduard Pestel of the Systems Research Center, Case Western Reserve University (US) and the Technical University Hanover (W. Germany) respectively.

The Bariloche Foundation of Buenos Aires, Argentina is engaged in a study of an egalitarian society. The Japan Work Team under Yoichi Kaya, University of Tokyo, has several projects ongoing, specifically one concerned with the transfer of labor-intensive industries to lesser developed countries. The Dutch Work Team is completing the first phase of its future projection of "Problems of Doubling World Population" under Hans Linneman, University of Amsterdam; also in the Netherlands is the RIO project, under the direction of Jan Tinbergen, concerned with the future adjustments in world need equity.

The Club of Rome has been particularly characterized not only by the scale of the projects it has initiated, but by its careful attention to the wide circulation of their results, and by their deliberate efforts to bridge the gap between research of this kind and political policy making. Ongoing work has been consistently paced by presentations and discussions to statesmen and legislators from countries of differing ideologies and conditions.[10]

Futures societies: There are now a variety of membership societies clustered around the theme of the future. They are not necessarily engaged in futures work themselves but their prime function is to encourage awareness of the future, to disseminate materials through their journals and newsletters and to develop local and national group activities.

One of the earliest of these, still existing, is Mankind 2000. Originating in London, and given its title by pioneer "futurist" Robert Jungk, this society was one of the cosponsors of the first futures studies congress[11] in Oslo in 1967. Through its executive director, James Wellesley-Wesley, it has been actively engaged in the initiation and organization of the later world congresses in Kyoto and Bucharest, and the Special Rome Conference on Human Futures[12] arranged by IRADES, the Italian futures studies center. Though never large or extensive in its membership this society has had an important catalytic function in the development of futures studies.

Table 4
Methodologies

Expert panels	10.0 %	Delphi techniques	5.5 %
Extrapolation techniques	8.8	Operational models	5.1
Individual expert' forecasting	8.7	Cross impact analysis	3.9
Statistical models	8.4	Causal modeling	3.9
Brainstorming	8.1	Network analysis	2.8
Scenario building	7.9	Relevance trees	2.4
Simulation	6.2	Gaming	2.3
Historical analogy	5.9	Contextual mapping	2.1
Probabilistic forecasting	5.8	Others	2.4

The most active and largest of this type of organization is The World Future Society, headquartered in the United States but with local chapters in several other countries. The society's growing membership reflects increased interest in the future — it has risen from 200 in 1967 to over 12,000 by 1974. In addition to publishing its own journal *The Futurist*, it also has a supplemental program of circulated papers and has recently launched its own book series.[13] A recent and intriguing aspect of the society's expanding activities is its employment service to help members find future oriented jobs.

There are a number of similar societies in other countries. One country example may suffice here. The Swedish Society for Future Studies, a membership organization, organizes lectures and discussions. The Swedish Association for Future Studies, a subsidiary of the Royal Swedish Academy of Engineering Sciences, provides companies, authorities and other organizations with a regular information service and special studies of interest on a yearly subscription basis.

Of a somewhat different character from the preceding societies is the "World Futures Studies Federation." This organization has been germinating since the 1967 Oslo meetings indicated the need for some more formal linking agency for exchanging information between futures studies centers and individuals around the world.

The various individuals concerned with the federation have been somewhat cautious about the possibility of premature closure of the field by the imposition of undue organizational structure; it has therefore developed rather slowly. At the Third World Futures Research Congress in Bucharest, 1971, a recommendation was finally adopted to create the federation as a kind of international liaison structure for specialists in the field. In 1973, the federation was formally inaugurated in Paris with its founding president, Bertrand de Jouvenel, later giving way to the current president, Johan Galtung. Its aims are to plan and carry out regional and international conferences and workshops: to serve as a forum to encourage cooperative research activities; to stimulate awareness of the need for organized futures studies and the future problems of the world; to promote the democratization of future oriented thinking.

The latter aim reflects a particular dichotomy between various futures workers, and is rather characteristic of the nature of the field itself. On the one hand, there is a continuing drive towards increased specialization and professionalism amongst those engaged primarily with futures studies; on the other, there is the perceived need to engage the broadest and most diverse array of persons, both professionals and nonprofessionals, with futures oriented thinking and action. This polarization between "scholar" and "activist" continues. In summarizing the core of the debate, Dror has underlined:

> sharpening some of the required hard choices which must be taken by futurists if they want to prevent futures studies from becoming too many things to too great a diversity of persons, and thereby eventually degrading into becoming nothing to all.[14]

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2000

Aménagement du territoire, innovation, avenir.

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Ekistics

Megalopolises around the world	*Jean Gottman*
Ecumenopolis (extraits)	*C.A. Doxiadis & J.G. Papaioannou*
Livre blanc sur les établissements humains	*C.A. Doxiadis*

2000

Les problèmes de la planification urbaine	*Yona Friedman*
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Politique d'urbanisation en Algérie	*J. Boumédine*
Sur une politique des espaces habitables	*B. Haumont*
Prospective de l'habitat en Europe	*R. Sajus*
Esthètique et énergie solaire	*D. Berks*

Contents of a special issue of the journal 2000 *(no. 36, May 1976) devoted to the subject "Habitat."*

Ekistic grid index

The articles in this issue are coded by the scale of settlements and an aspect of an element indicated in the ekistic grid.

The content of each article is classified within an ekistic grid as follows:

- The scale of the settlement(s) with which the article deals is selected from among the 15 ekistic units:

Anthropos	1
Room	2
House	5
Housegroup	40
Small neighborhood	250
Neighborhood	1,500
Small polis	10,000
Polis	75,000
Small metropolis	500,000
Metropolis	4 million
Small megalopolis	25 million
Megalopolis	150 million
Small eperopolis	1,000 million
Eperopolis	7,500 million
Ecumenopolis	50,000 million

- The subjects dealt with in the article are selected from among the subheads of the five ekistic elements. The position of a dot in any square of the grid indicates which of the four subheads is being referred to. If the article arrives at a synthesis of these elements, either in a physical plan or in ekistic theory, the dot is at the top or bottom of the square.

key to placement of subheads

The subheads of the elements are:

NATURE(N)
1. Environmental analysis
2. Resource utilization
3. Land use, landscape
4. Recreation areas

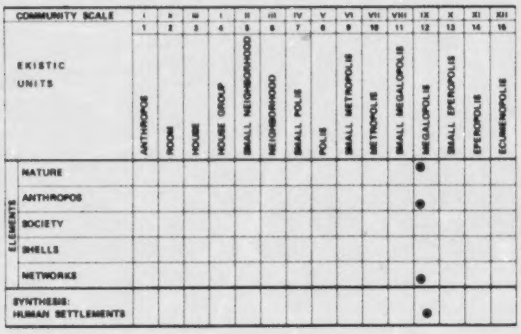
ANTHROPOS(A)
1. Physiological needs
2. Safety, security
3. Affection, belonging, esteem
4. Self-realization, knowledge, esthetics

SOCIETY(S)
1. Public administration, participation and law
2. Social relations, population trends, cultural patterns
3. Urban systems and urban change
4. Economics

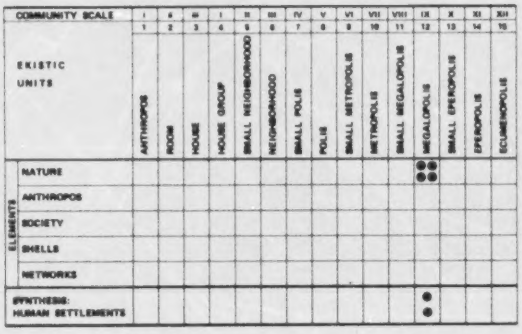
SHELLS(Sh)
1. Housing
2. Service facilities: hospitals, fire stations, etc.
3. Shops, offices, factories
4. Cultural and educational units

NETWORKS(Ne)
1. Public utility systems: water, power, sewerage
2. Transportation systems: road, rail, air
3. Personal and mass communication systems
4. Computer and information technology

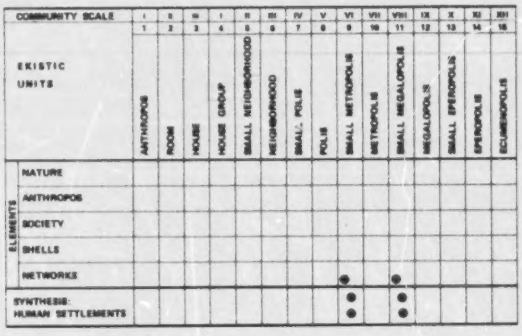
SYNTHESIS: HUMAN SETTLEMENTS(HS)
1. Physical planning
2. Ekistic theory



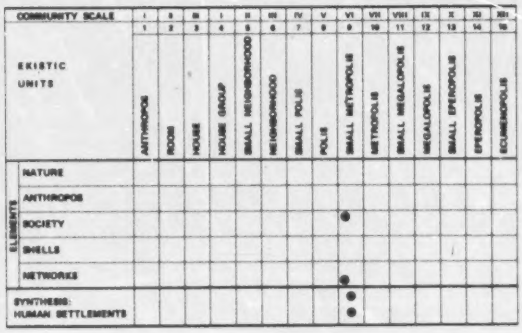
A holistic perspective for environmental education p. 252



Environment-based environmental education p. 257



Human settlements education p. 263



Planning education in Nigeria p. 271

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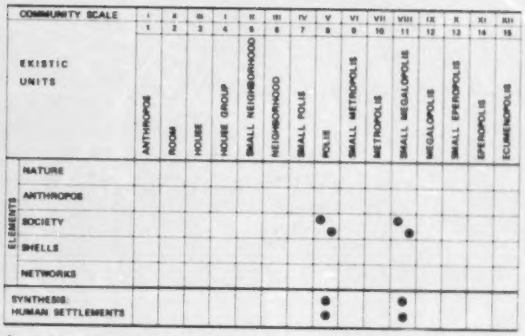
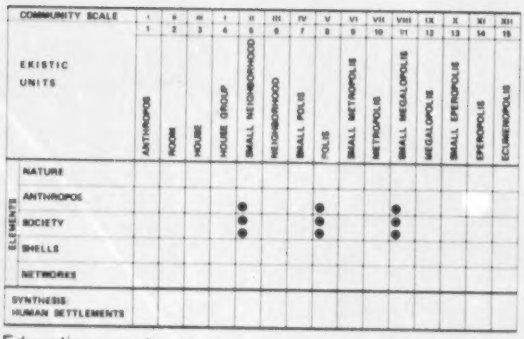
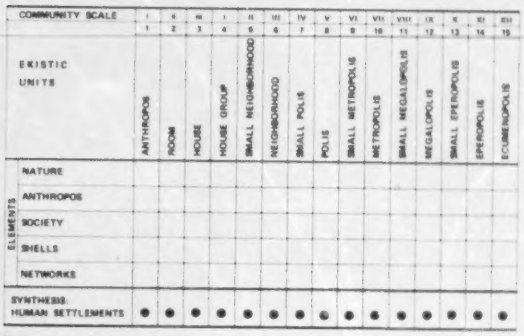


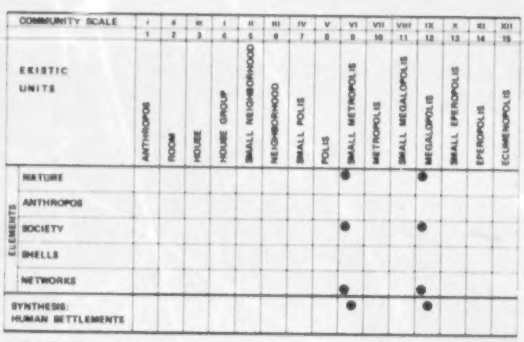
An educational approach to urban planning and development p. 277



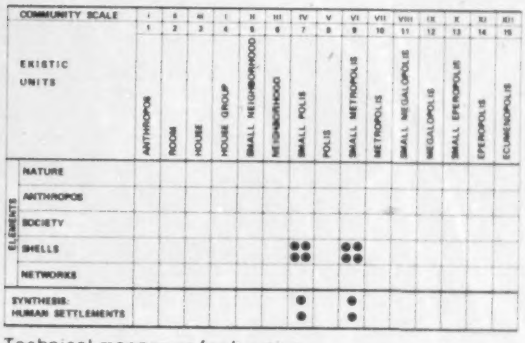
Education: working paper p. 288



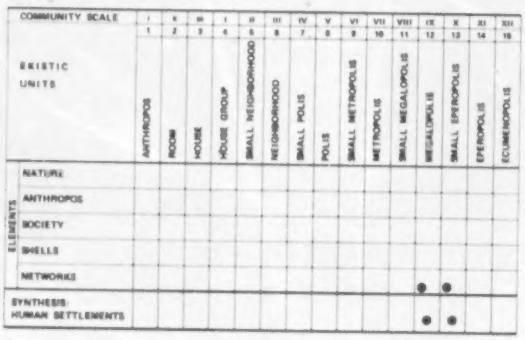
Education for planners of human settlements p. 281



ACCESS: Alternative comprehensive community environmental study system p. 294



Technical manpower for housing, building and planning p. 284



Futures studies: an international survey p. 300

EKISTICS (modern Greek: ΟΙΚΙΣΤΙΚΗ) is derived from the ancient Greek adjective *οἰκιστικός*, more particularly from the neuter plural *οἰκιστικά* (as "physics" is derived from *φυσικά*, Aristotle). The ancient Greek adjective *οἰκιστικός* meant: 'concerning the foundation of a house, a habitation, a city or a colony; contributing to the settling.' It was derived from *οἰκιστής*, an ancient Greek noun meaning 'the person who installs settlers in a place.' This may be regarded as deriving indirectly from another ancient Greek noun, *οἰκισις*, meaning 'building,' 'housing,' 'habitation,' and especially 'establishment of a colony, a settlement or a town' (already in Plato), or 'filling it with new settlers'; 'settling,' 'being settled.' All these words grew from the verb *οἰκίζω*, 'to settle,' and were ultimately derived from the noun *οἶκος*, 'house,' 'home' or 'habitat.'

The English equivalent of *οἰκιστική* is *ekistics* (a noun). In addition, the adjectives *ekistic* and *ekistical*, the adverb *ekistically*, and the noun *ekistician* are now also in current use. The French equivalent is *ékistique*, the German *ökistik*, the Italian *echistica* (all feminine).